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DIY: Clutch Replacement pictorial

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02-13-2010, 07:16 PM

#1

SubyRS1
2.2L

DIY: Clutch Replacement pictorial

Car: 2013 BRZ...sold the 99RS :(
Fav Mod: SPT cat back system
 My: [Subaru Parts](#)
 Join Date: Dec 2008
 Location: Long Beach, CA
 Trader Rating: **(3)**
 Posts: 154

Do It Yourself: Clutch Replacement. 1999 Subaru 2.5RS. 5-speed Manual Transmission.

Notes

This pictorial DIY covers complete disassembly and reassembly over the entire job (no "repeat steps in reverse" finish).
 Disassembly is covered from Steps 1 to 27.
 Reassembly is covered from Steps 28 to 52.
 This task could take from 12 to 20 hours, depending on how particular you are with cleaning all your parts.
 A helper is needed to work the floor jack to lower and raise the transmission while you steady it under the car.

It is helpful to use the ***Electrical & Torque Checklists*** below during reassembly. Check each item off the list as it is completed.

Auto Parts

New [Flywheel](#)
 New Clutch Disc
 New Clutch Pressure Plate assembly
 New Throw-out Bearing
 New Pilot Bearing
 New Clutch Fork Dust Boot (pt # 30542AA040)
 New [Exhaust Manifold](#) Gaskets (Felpro)
 Optional: Flywheel to crank bolts (pt # 800210660)

Fluids / Chemicals

(1) High-Temp (brake) Grease
 (4 quarts) [Transmission Gear Oil](#)
 (1 spray can) Engine Degreaser
 WD-40

Service Tools

(1) 2-ton Floor Jack that can reach 19" high minimum
 (4) Jack Stands that can reach to 18" minimum height
 (1) [Subaru](#) scissor jack
 (1) [Portable Work Light](#)
 (3 foot) wood 2x4 (cut for engine support)
 Oil drain pan

Hand Tools - Special

(1) Special clutch [alignment tool](#) (comes with clutch set usually)
 (1) Torque wrench capable of 10 to 110 ft. lbs.
 (1) long 1/2" drive breaker bar
 (Use 6-point sockets to remove and reinstall all torque spec'd bolts)
 (1) 3/16" to 7/32" round flat punch with 1 3/4" reach
 (Sockets, Open Ends and Box Ends from 8mm to 17mm)
 (1) 13/16" socket (transmission [drain bolt](#))

CHECK LIST: Electrical Connectors encountered

(2) Catalytic converter plugs
 (1) Neutral switch plug
 (1) Back up switch plug
 (1) Transmission Speed Sensor plug
 (1) Transmission Ground terminal
 (1) Starter + terminal
 (1) [Starter Solenoid](#) plug
 (1) Engine Ground terminal

CHECK LIST: Torque Specs encountered

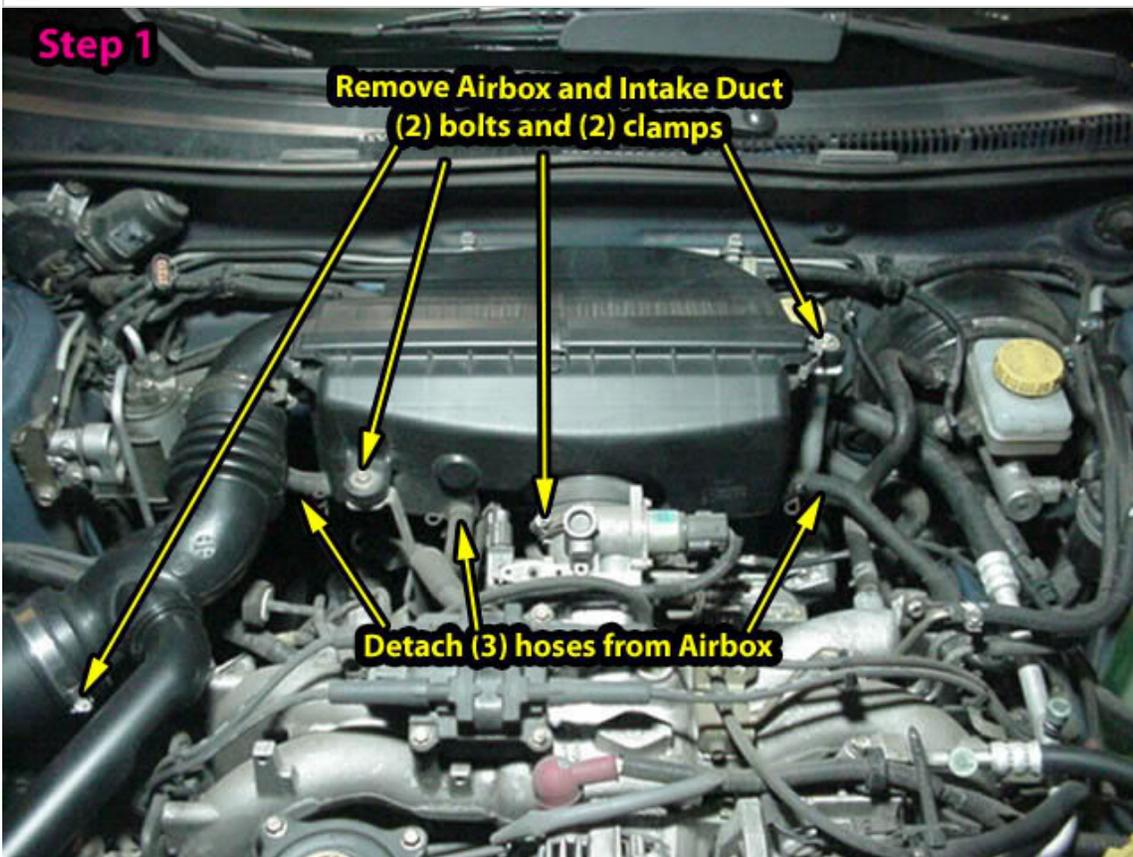
Flywheel to crank (8 bolts) 53 ft. lbs.
 Clutch Pressure Plate (6 bolts) 11.6 ft. lbs.
 Transmission Bell Housing (6 bolts + 2 nuts) 36.9ft. lbs.
 Clutch Slave Cylinder (2 bolts) 27.5 ft. lbs.
[Trans Crossmember](#) / front (2 bolts) 101 ft. lbs.
 Trans Crossmamber / rear (4 bolts) 51 ft. lbs.
 Pitching Stopper / front (1 bolt) 36.2 ft. lbs.
 Pitching Stopper / rear (1 bolt) 42 ft. lbs.
[Drive Shaft](#) to rear diff. (4 bolts/nuts) 23.1 ft. Ins.
 Drive Shaft enter bracket (2 bolts) 38.3 ft. lbs.
 Exhaust Manifold (6 nuts) 22.4 ft. lbs.
 Exhaust Hangar bracket (1 bolt) 22.4 ft. lbs.
 Mid Pipe Spring Joint (2 spring bolts) 13 ft. lbs.
 Transmission Drain (1 mag bolt) 32.5 ft. lbs.

LETS GET STARTED.

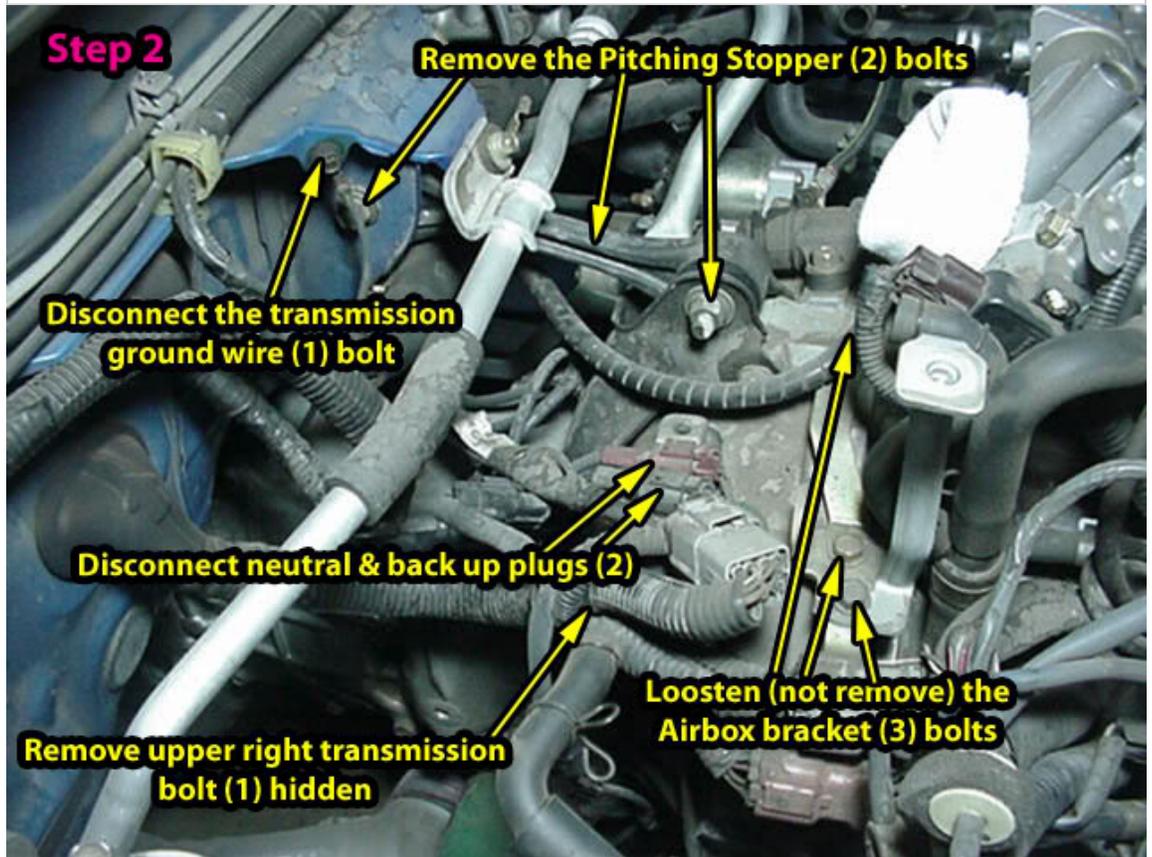
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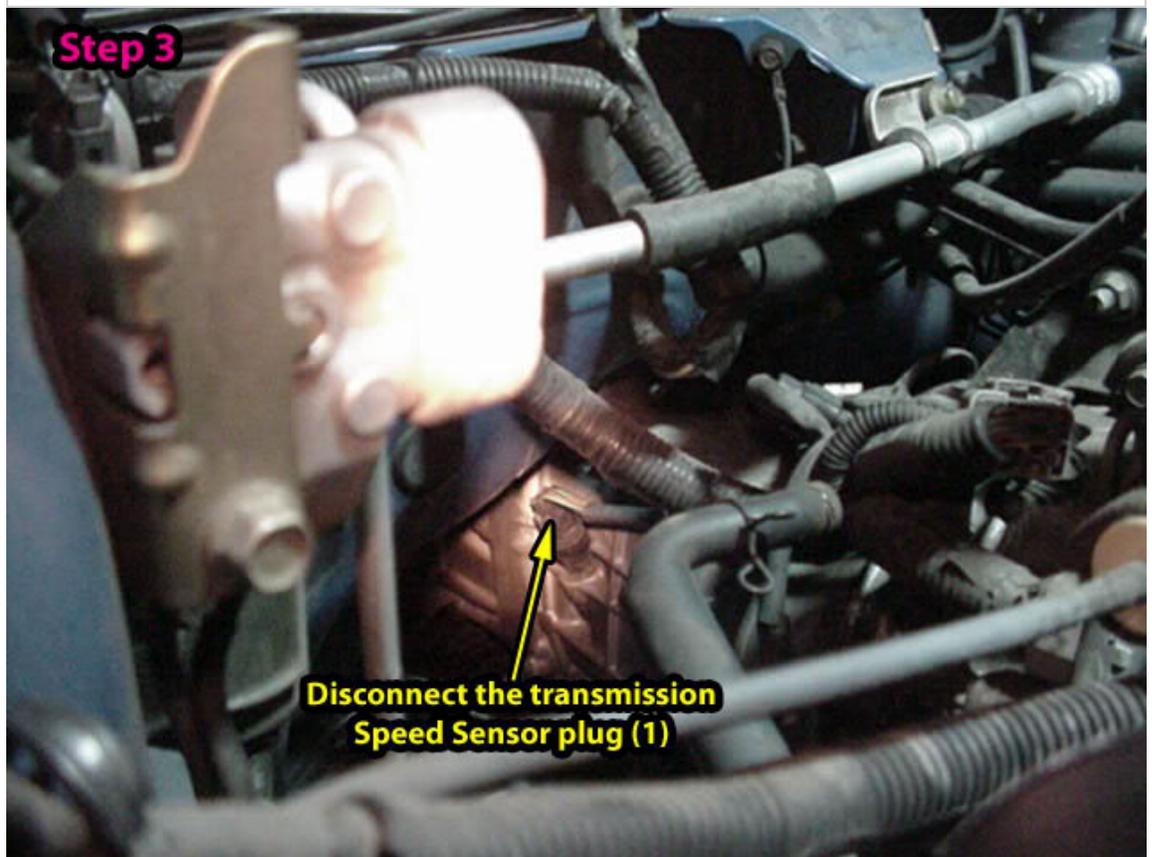
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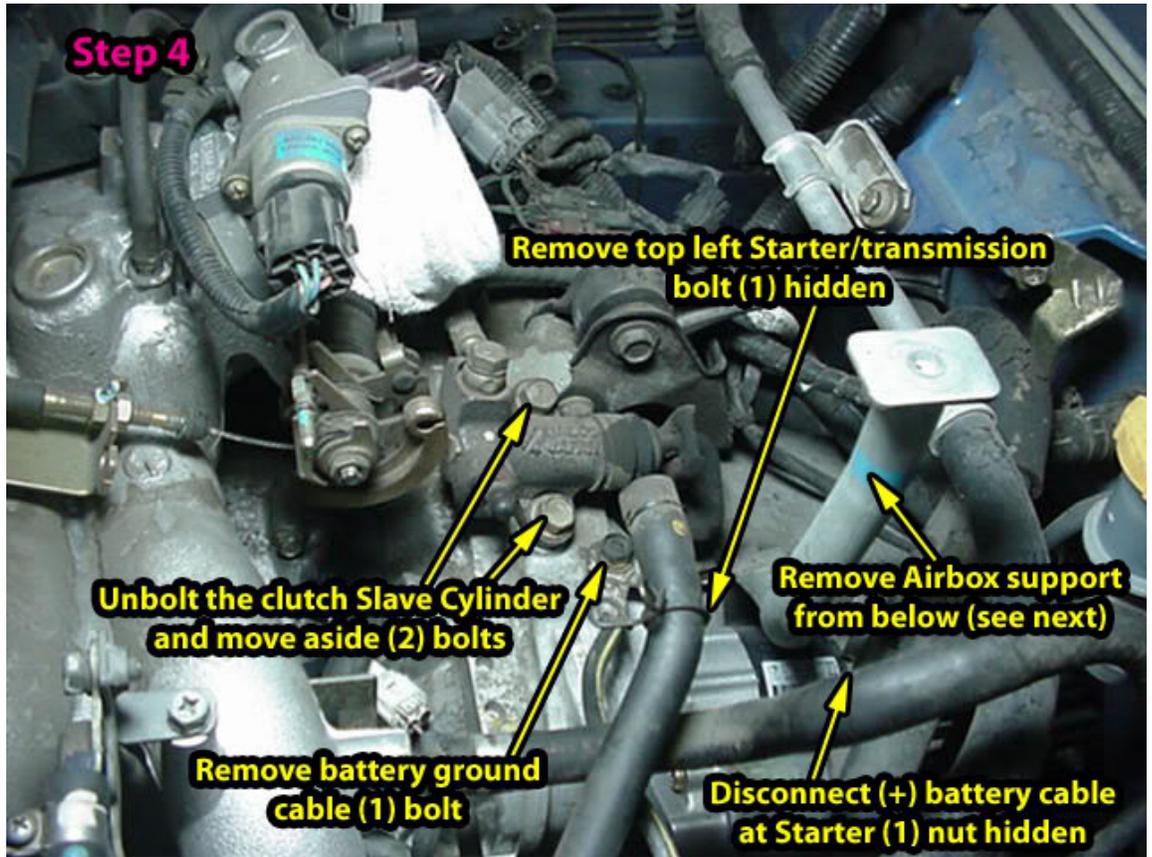
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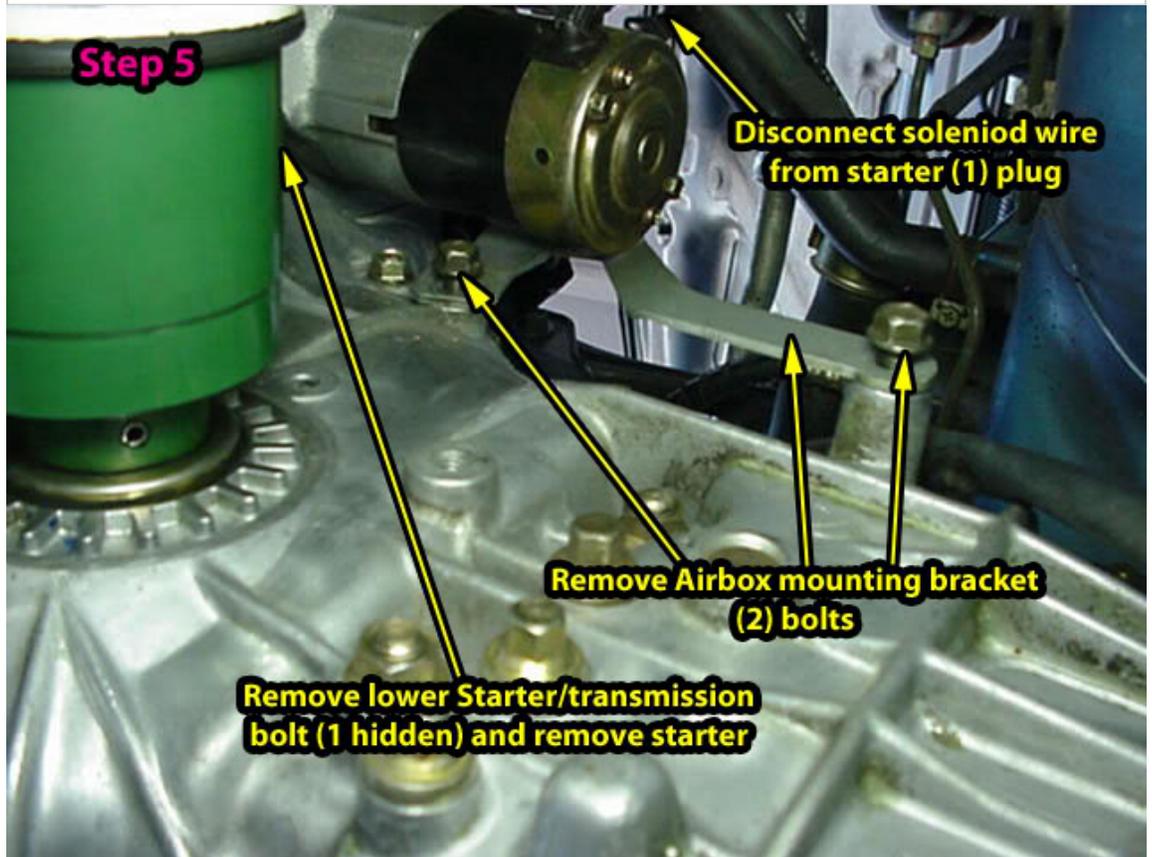
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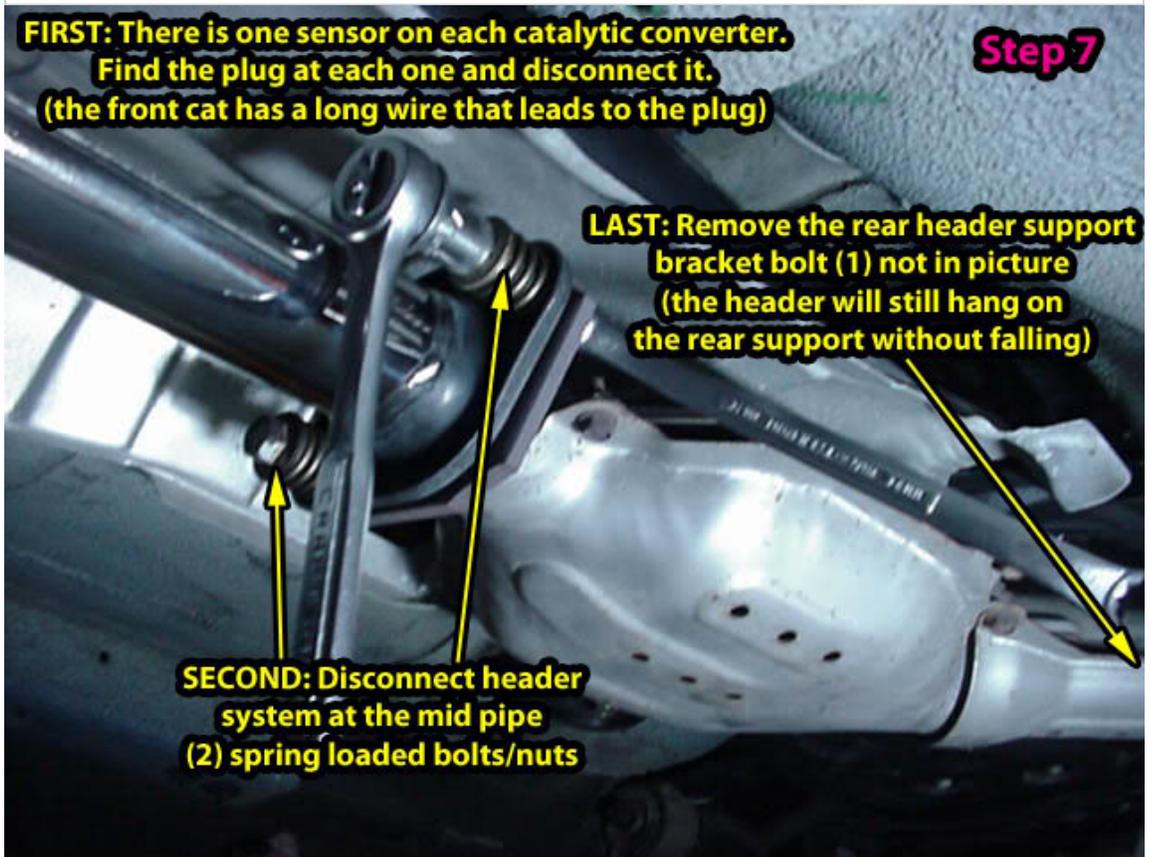
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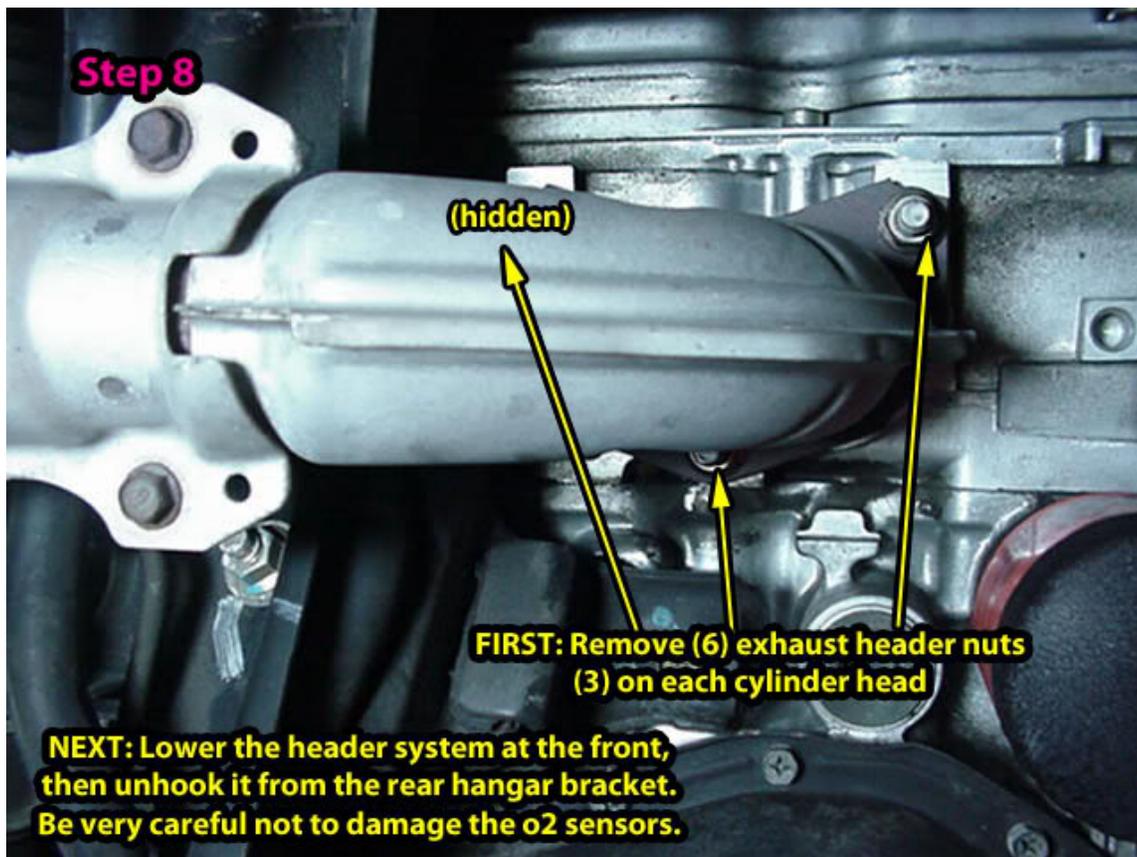
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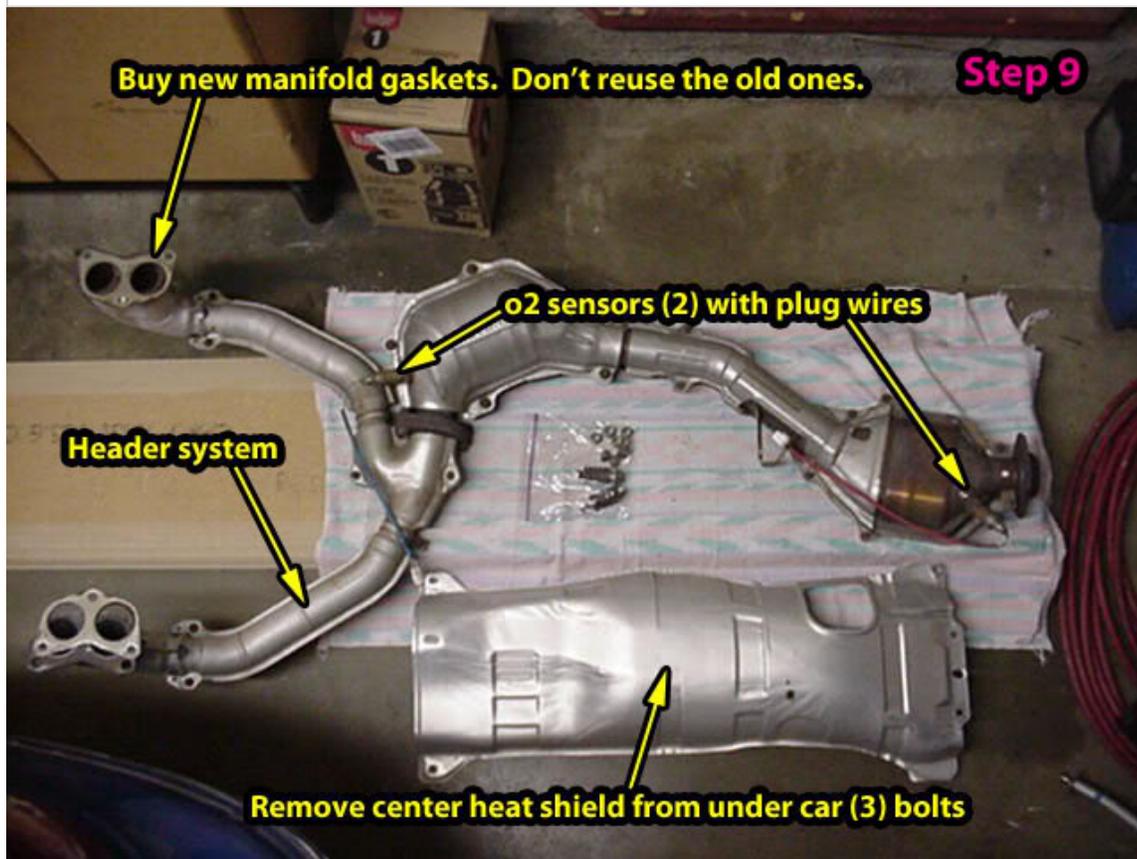
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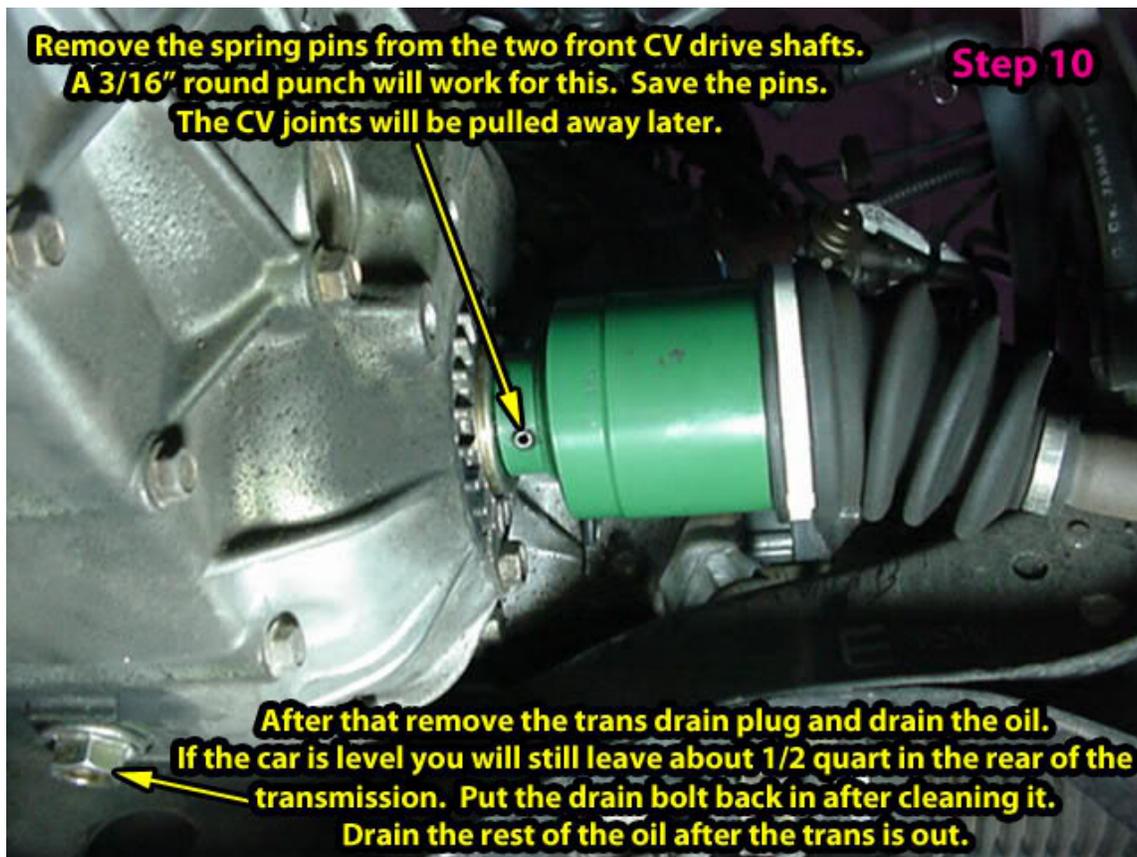
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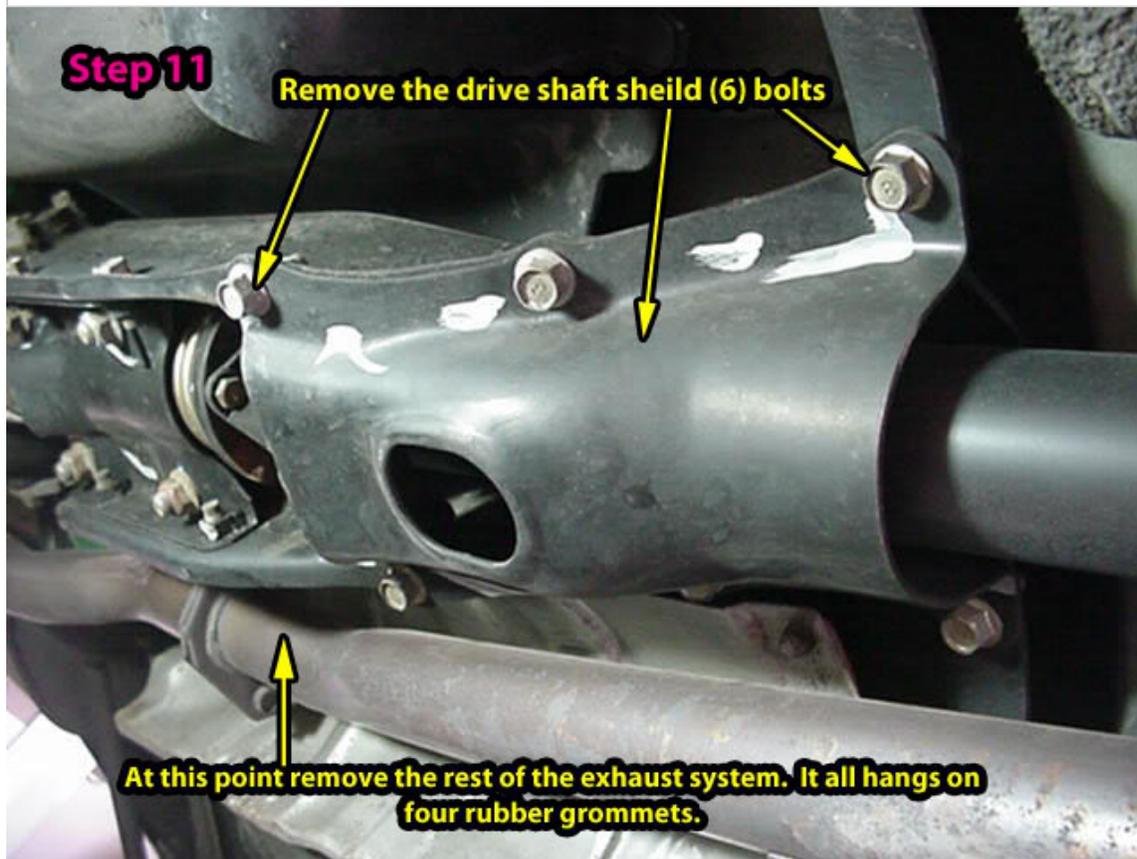
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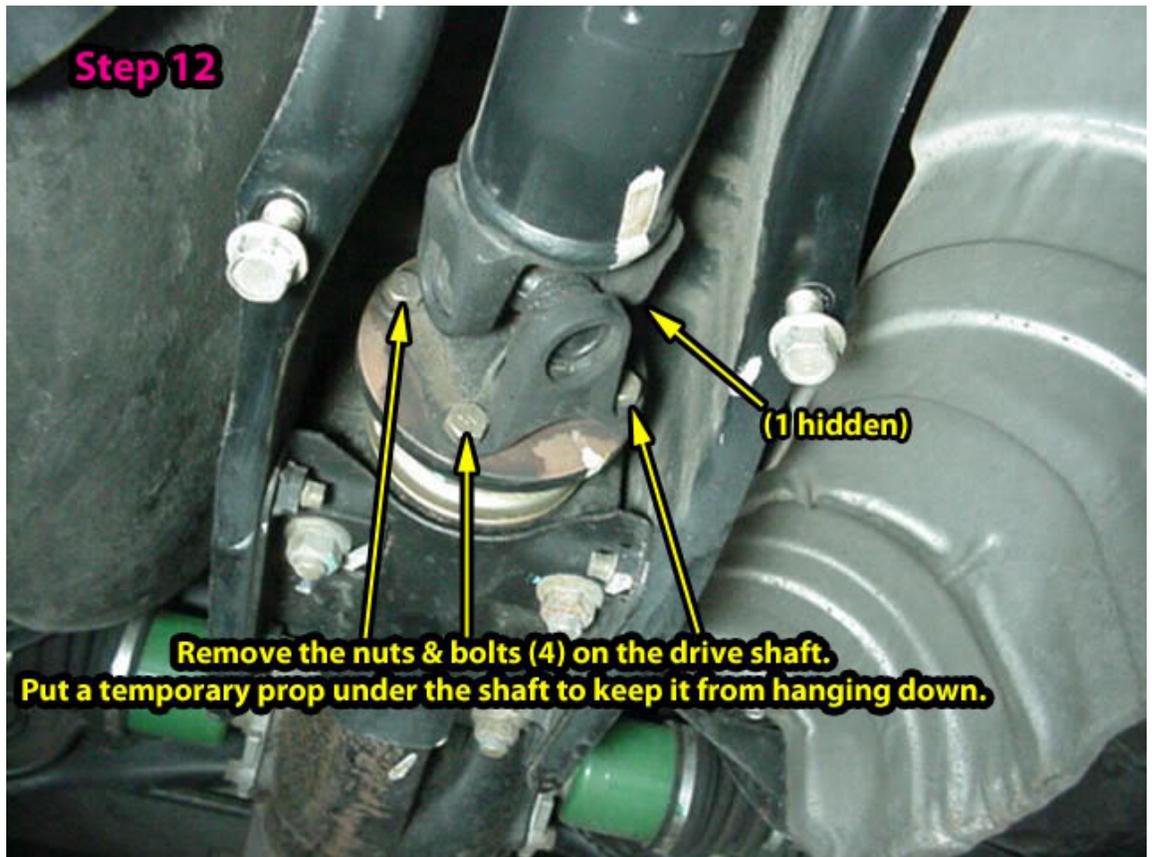
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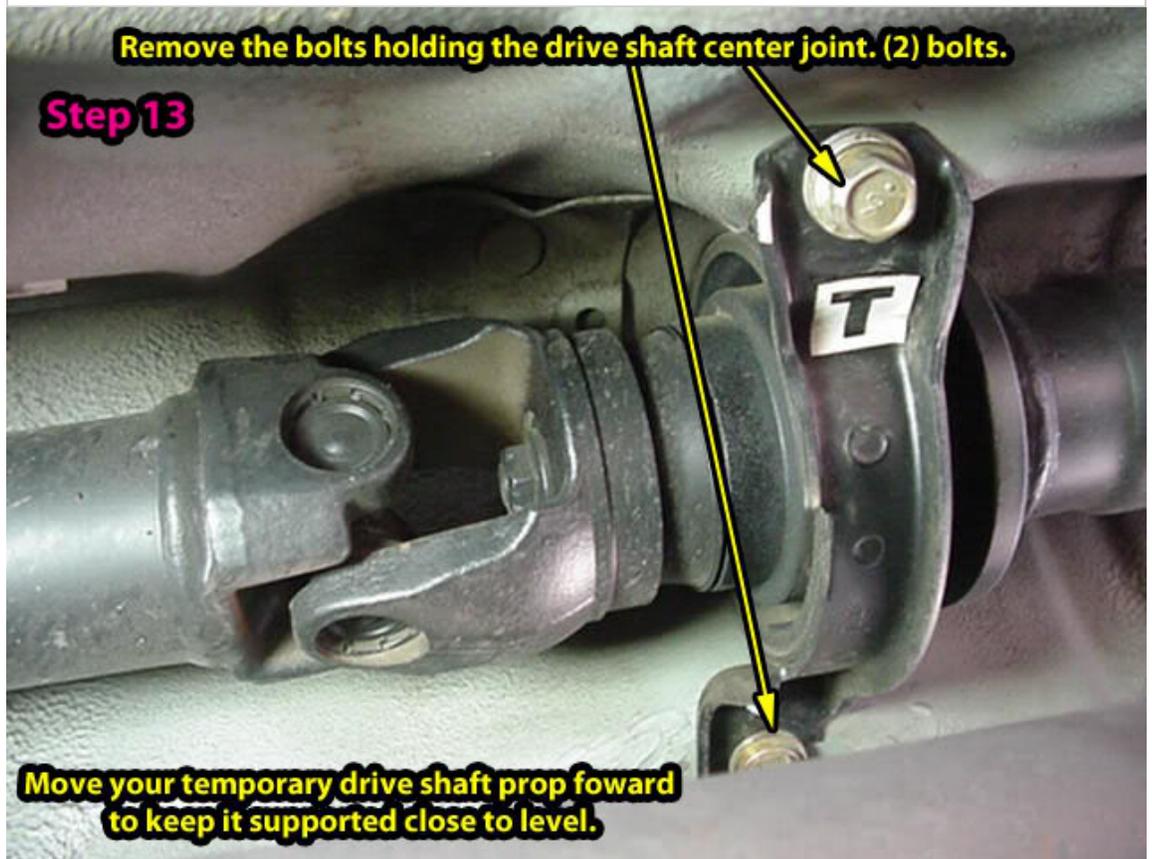
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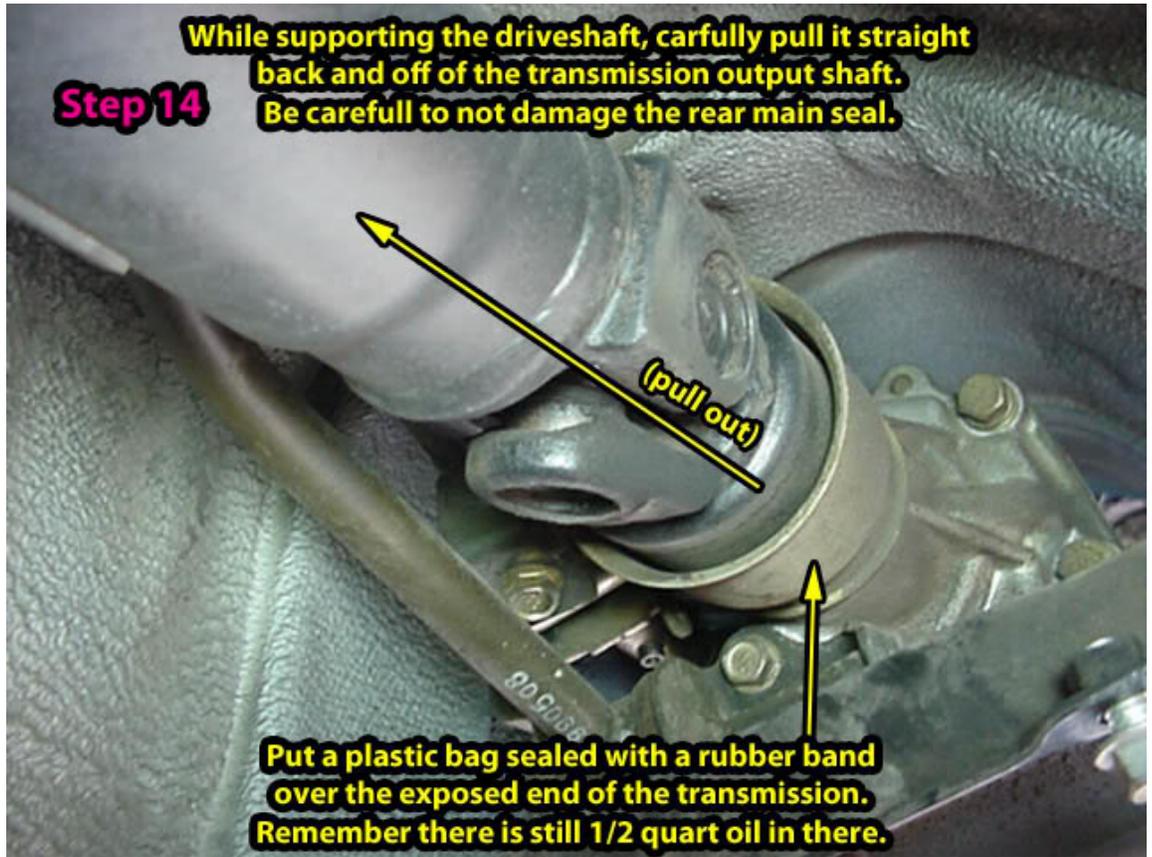
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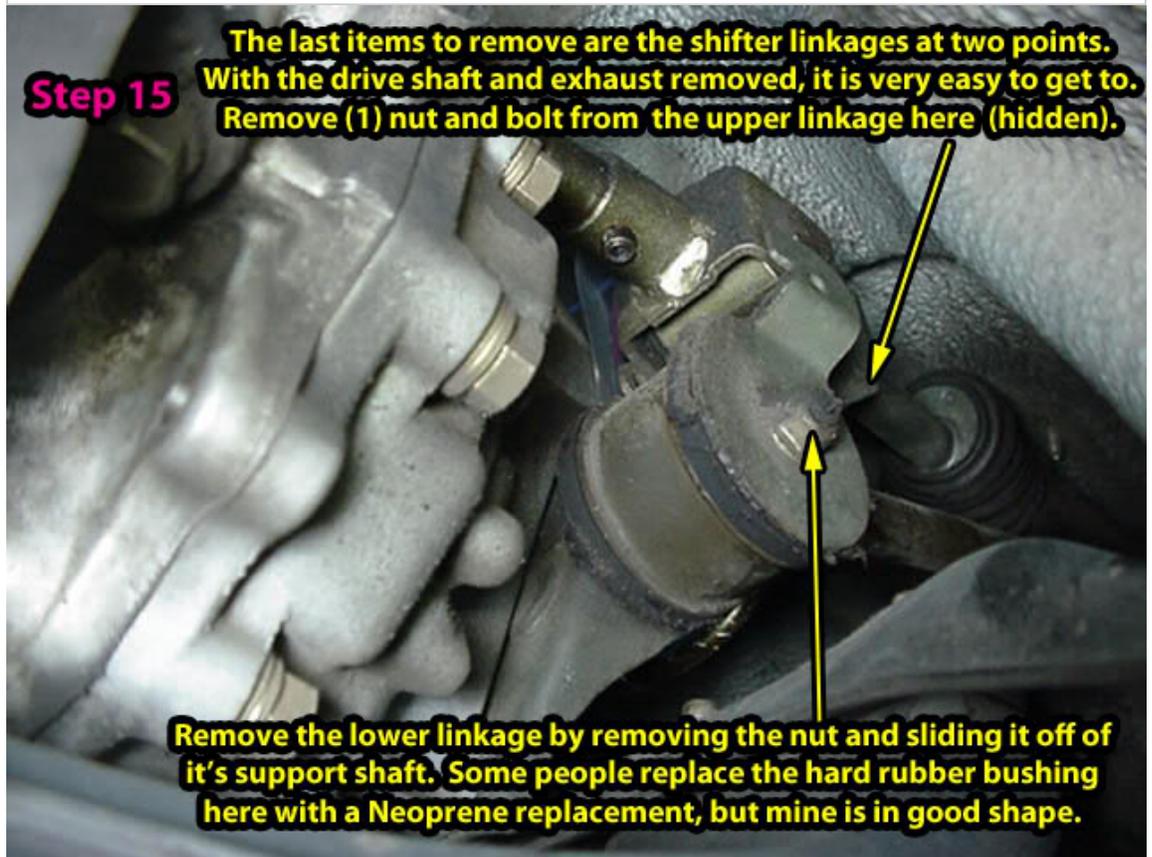
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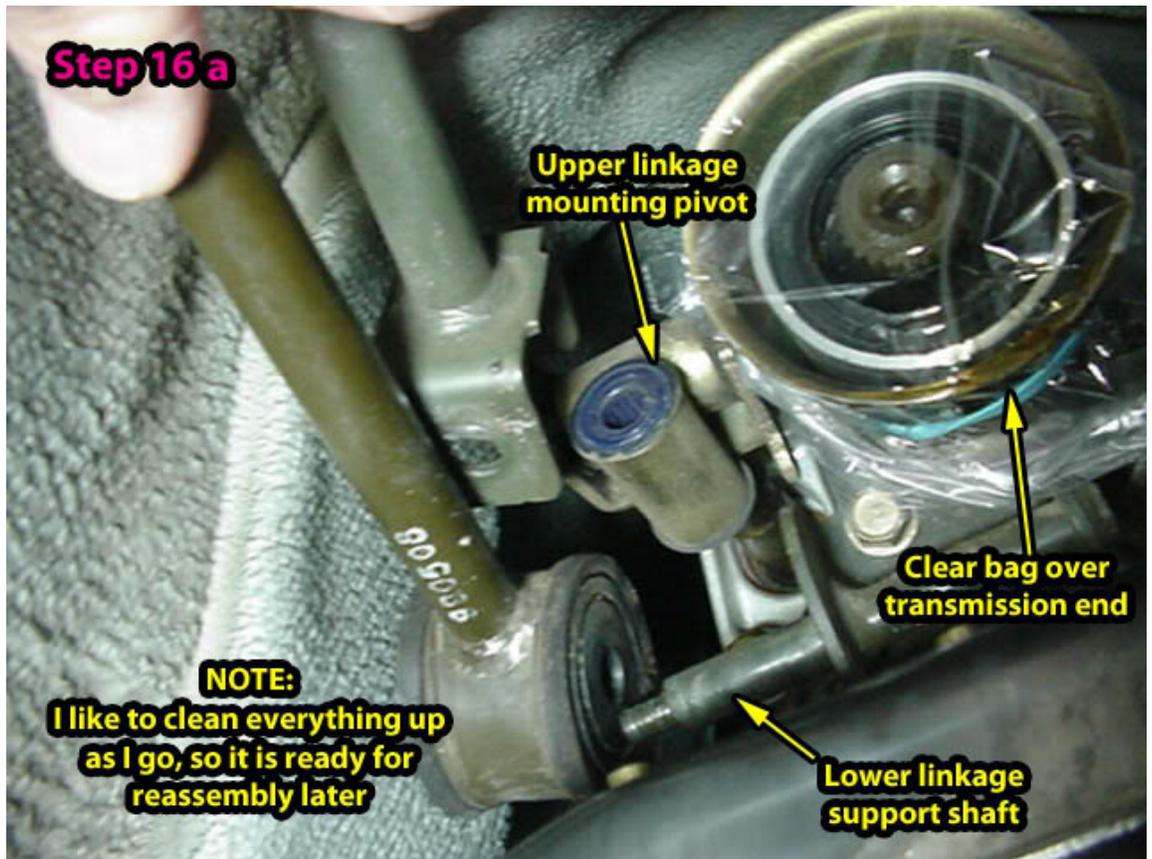
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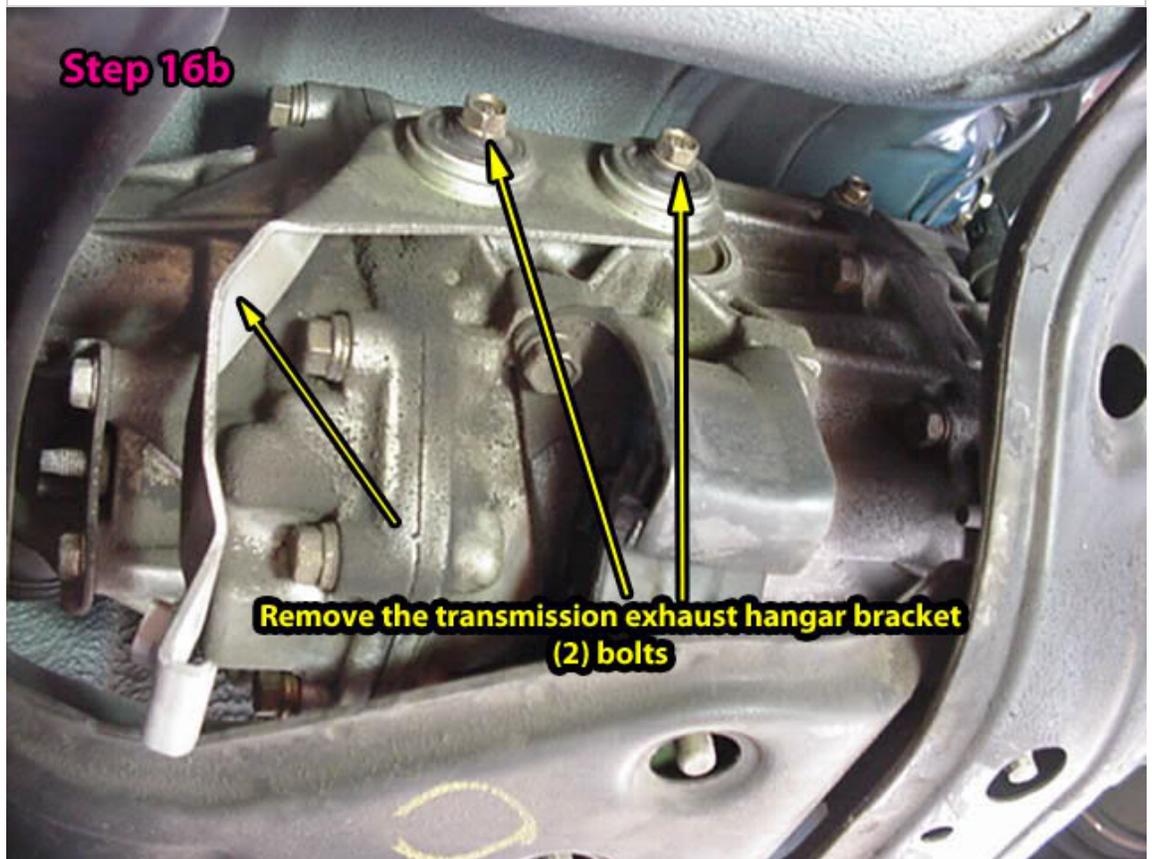
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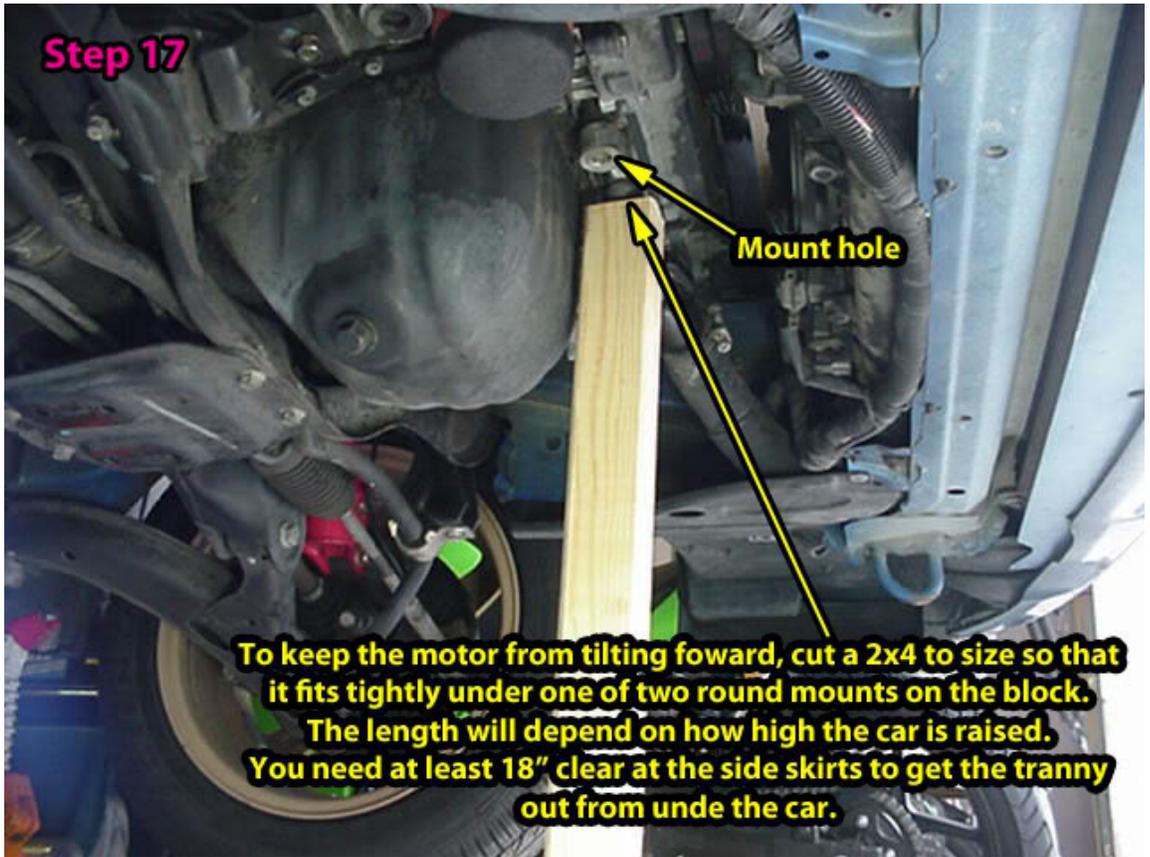
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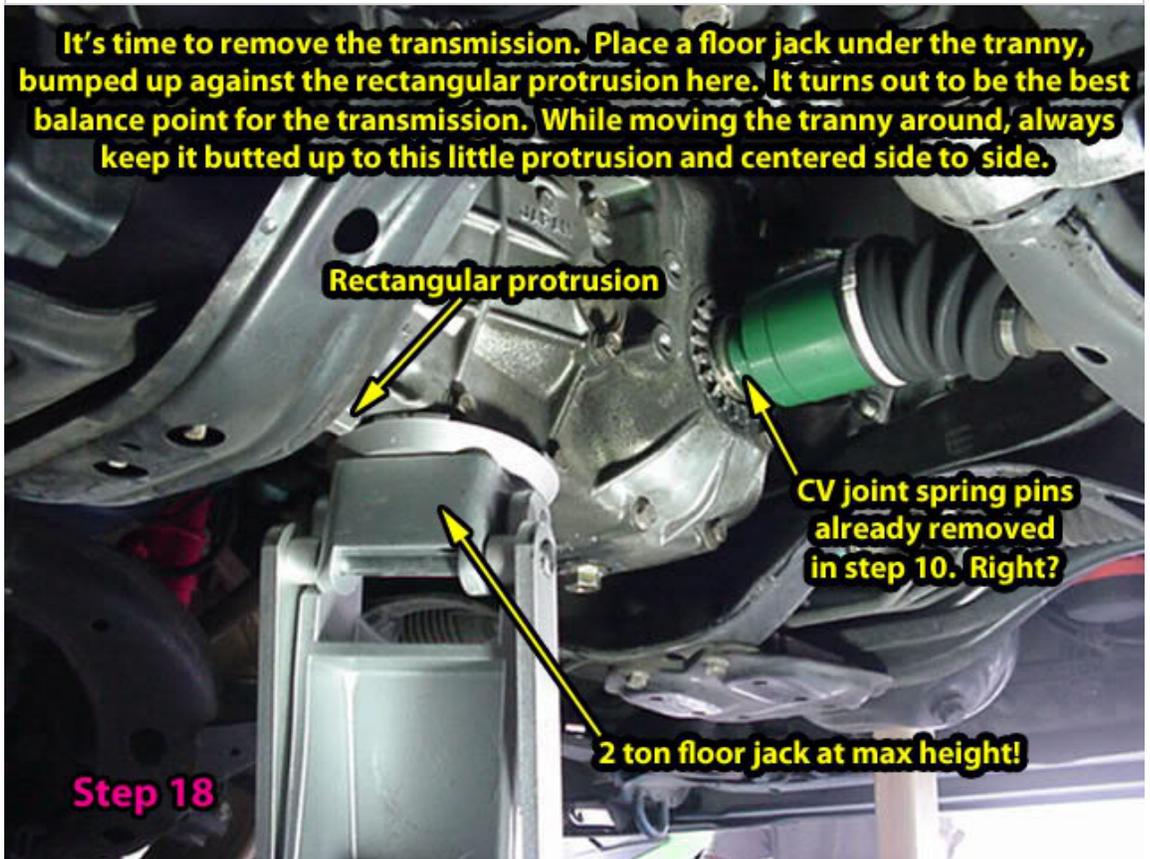
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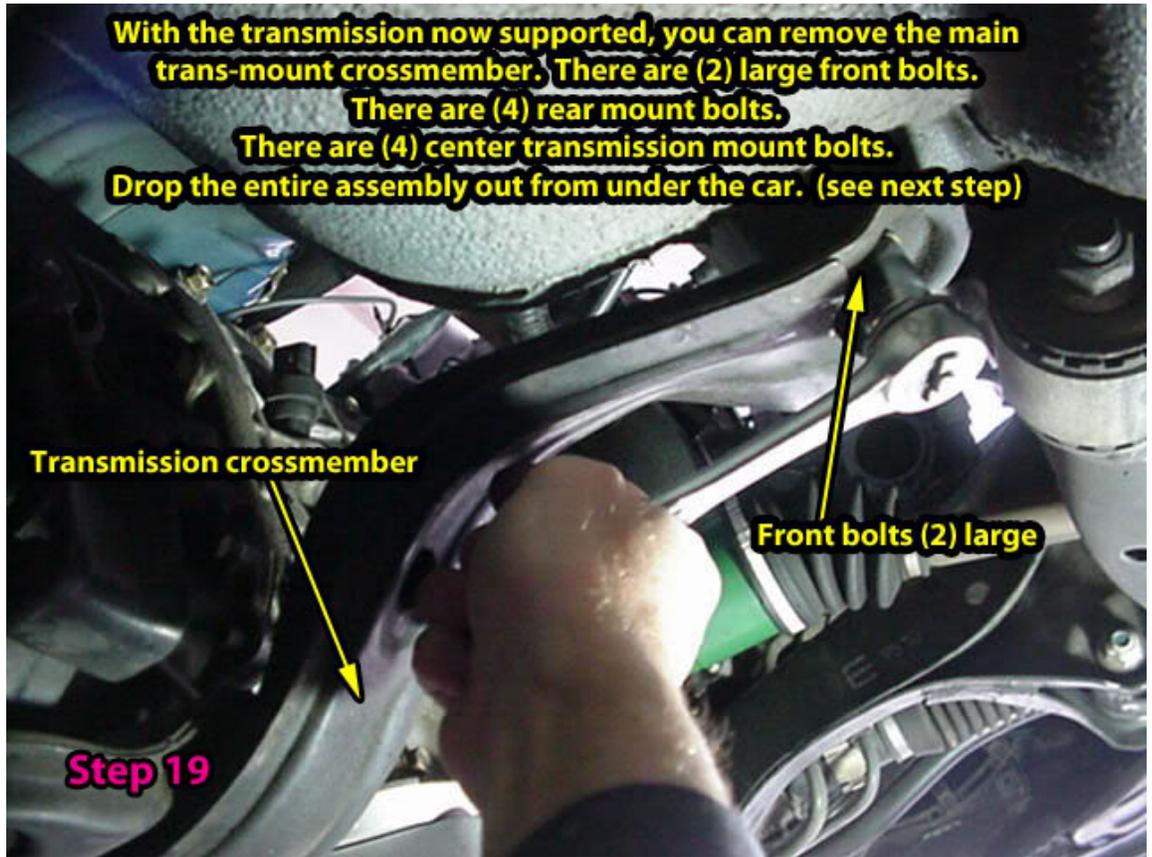
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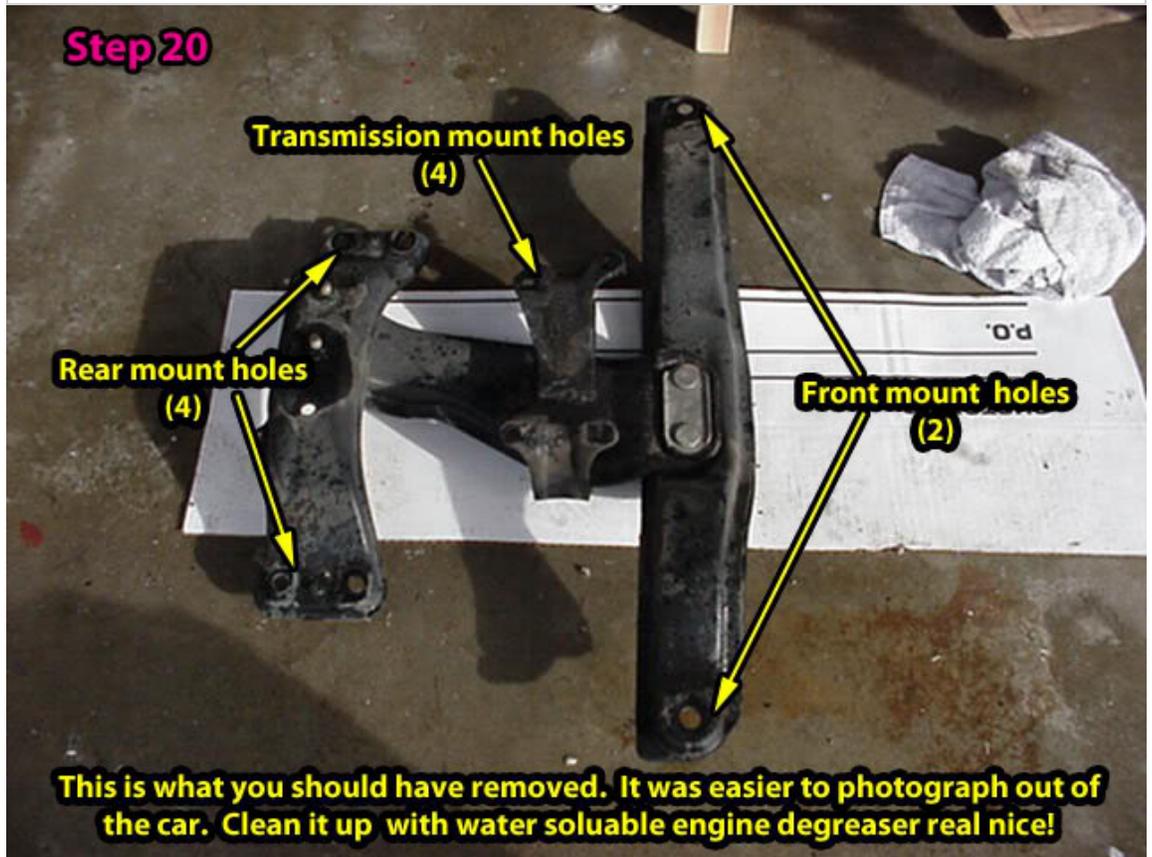
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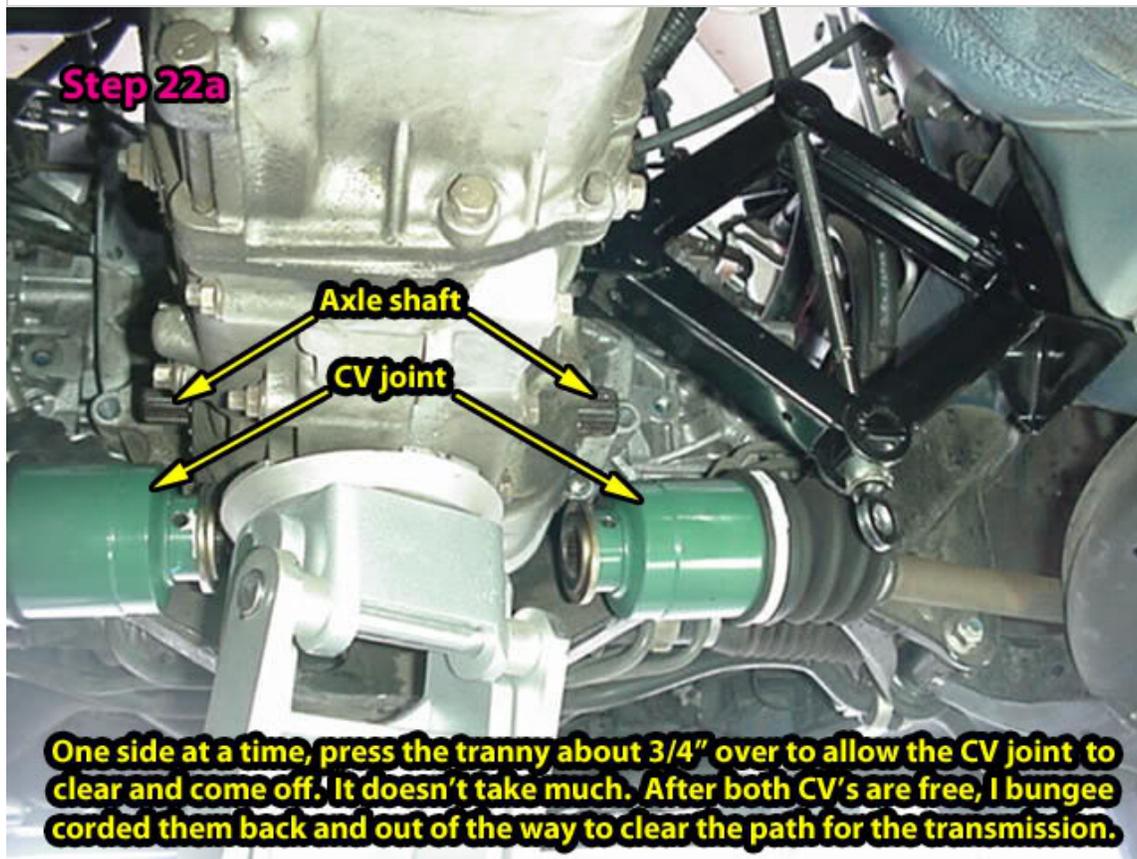
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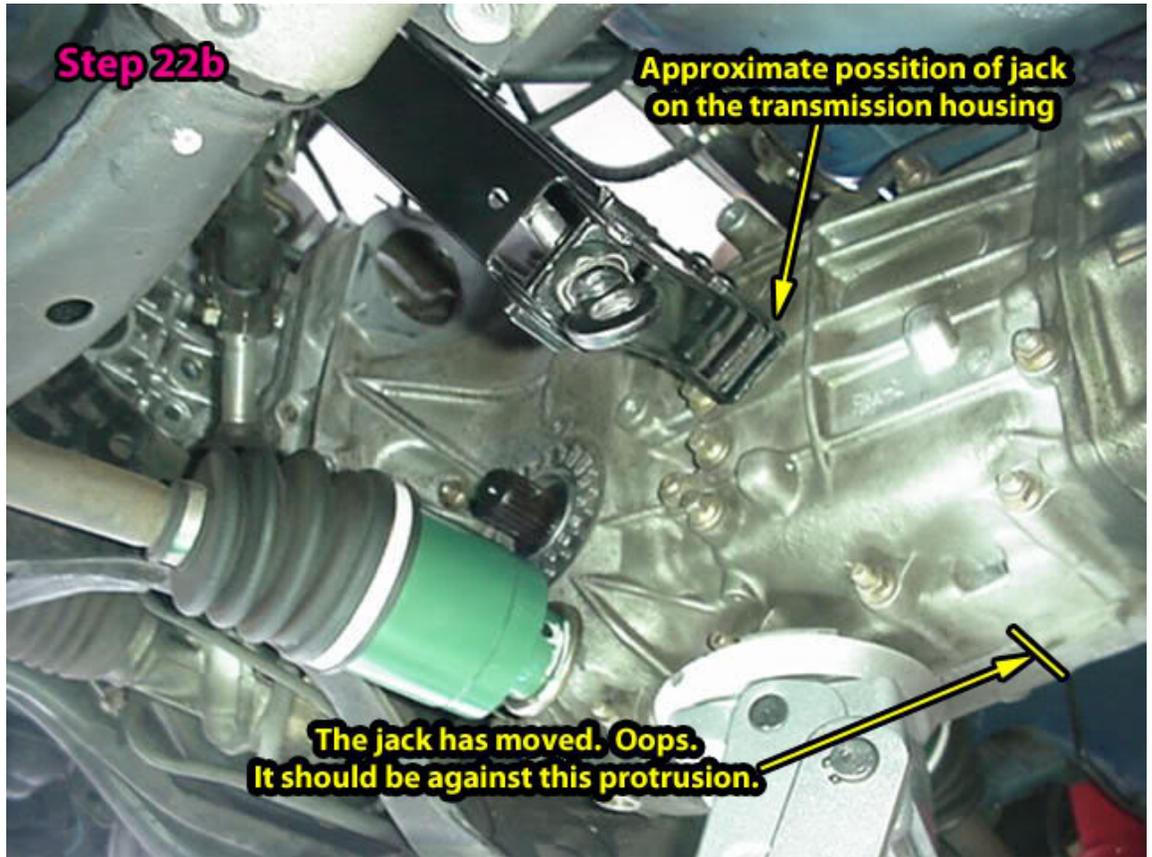
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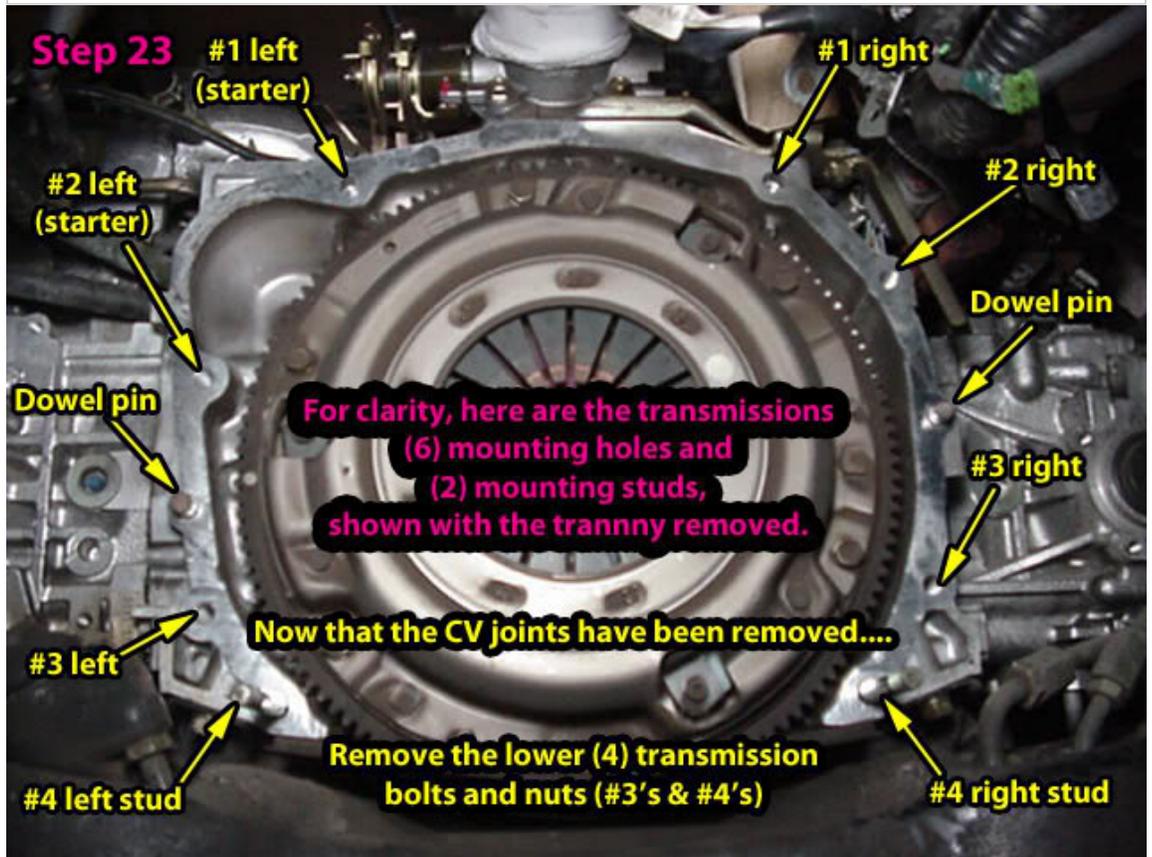
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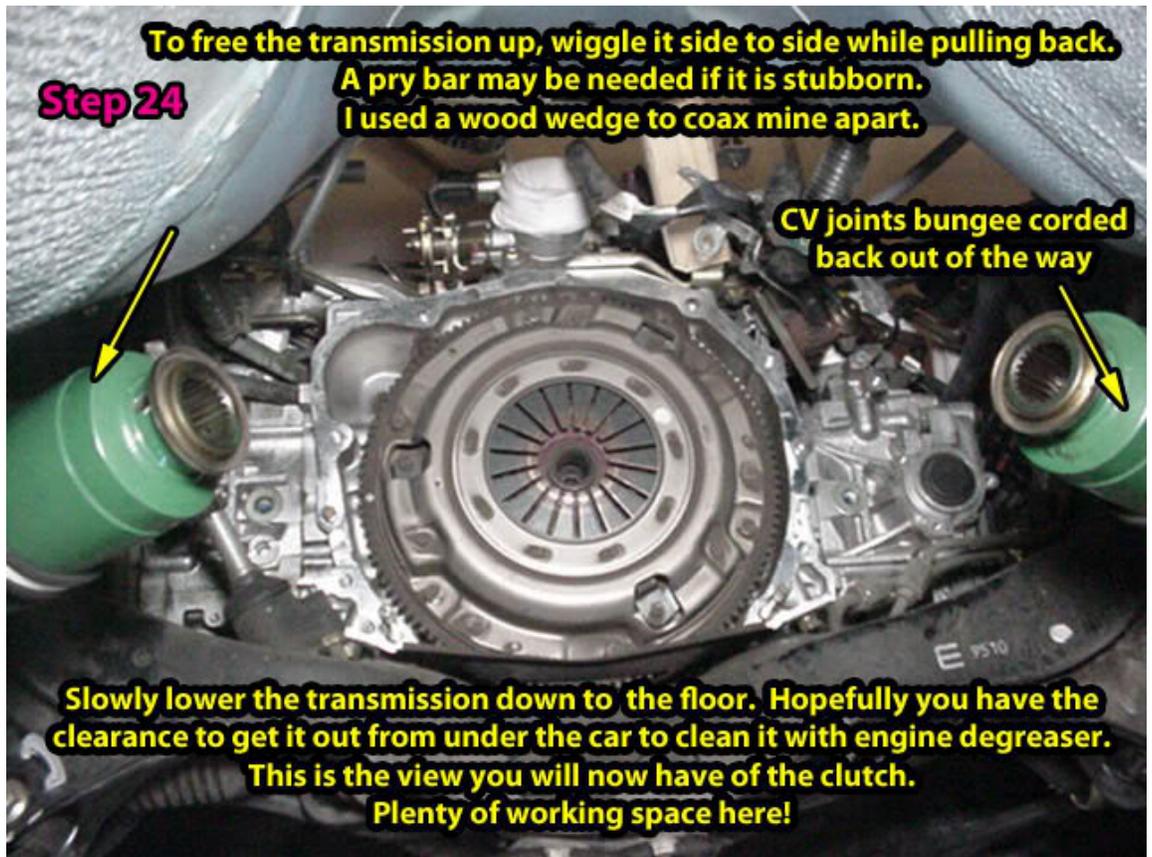
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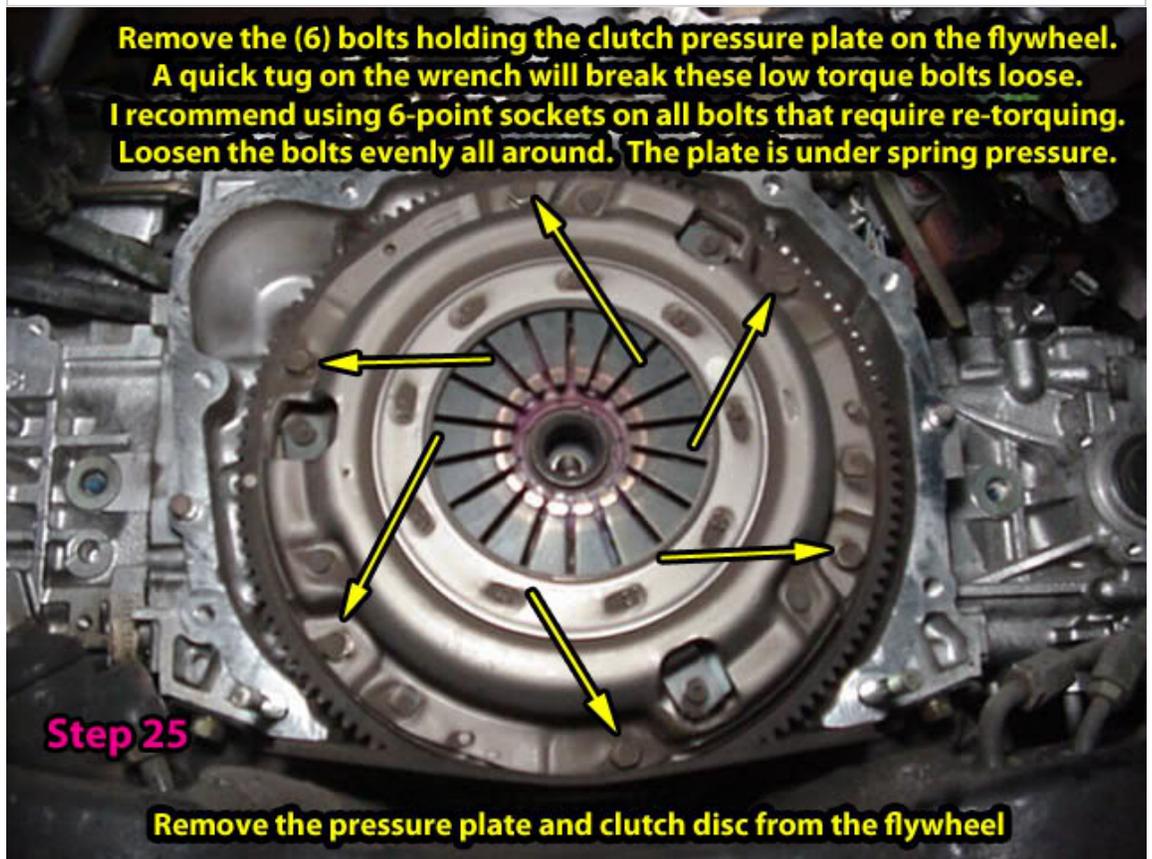
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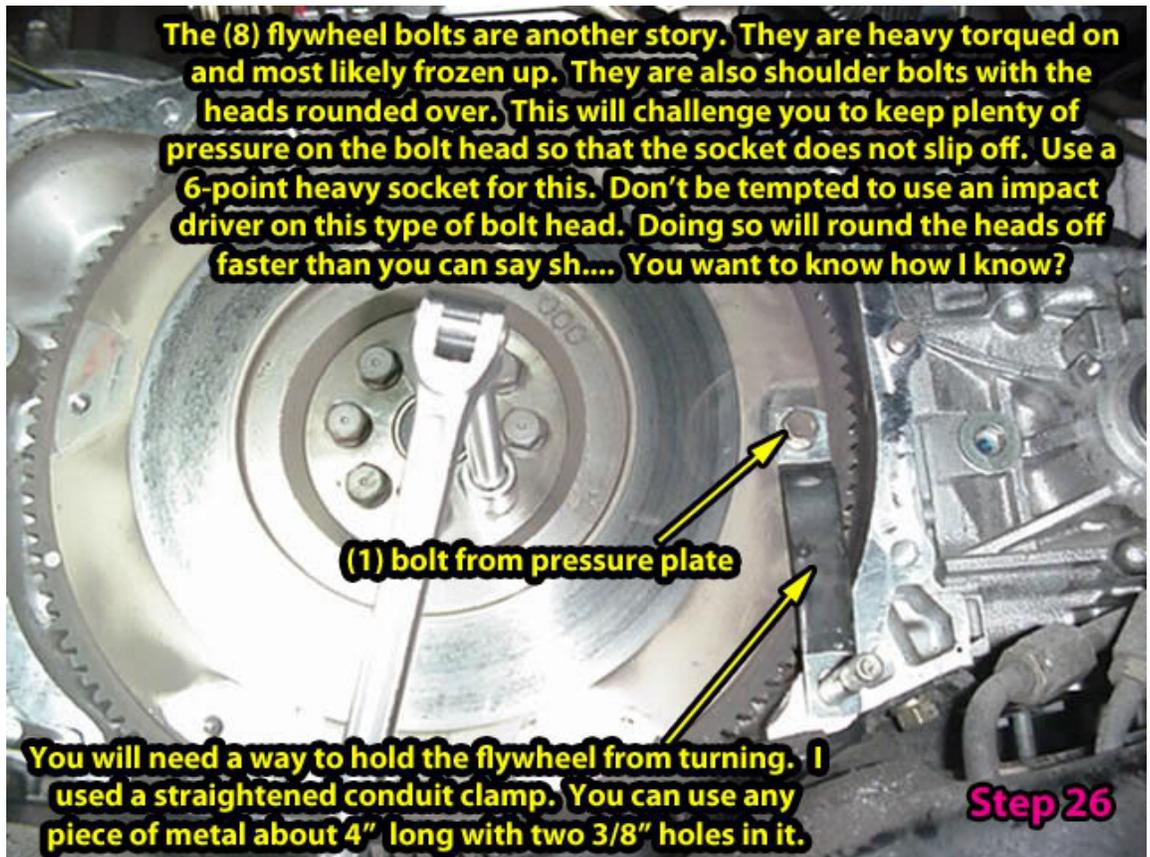
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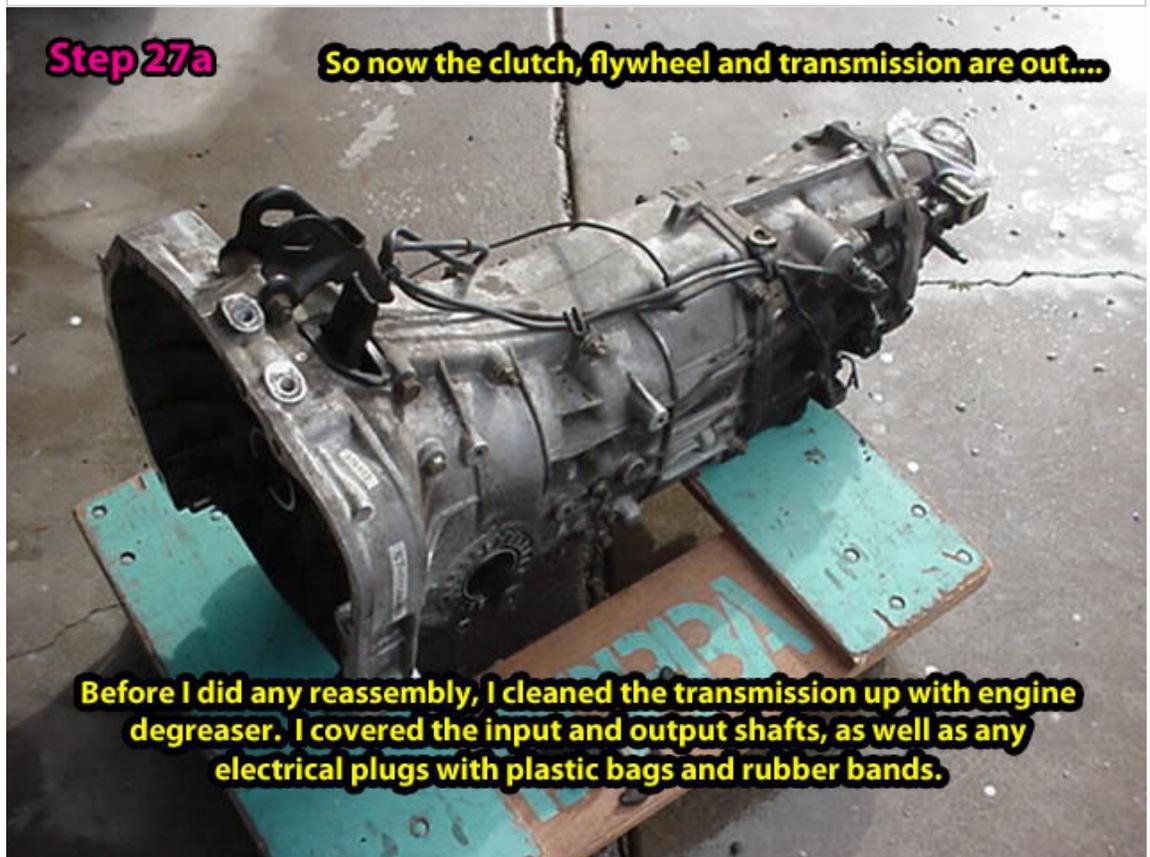
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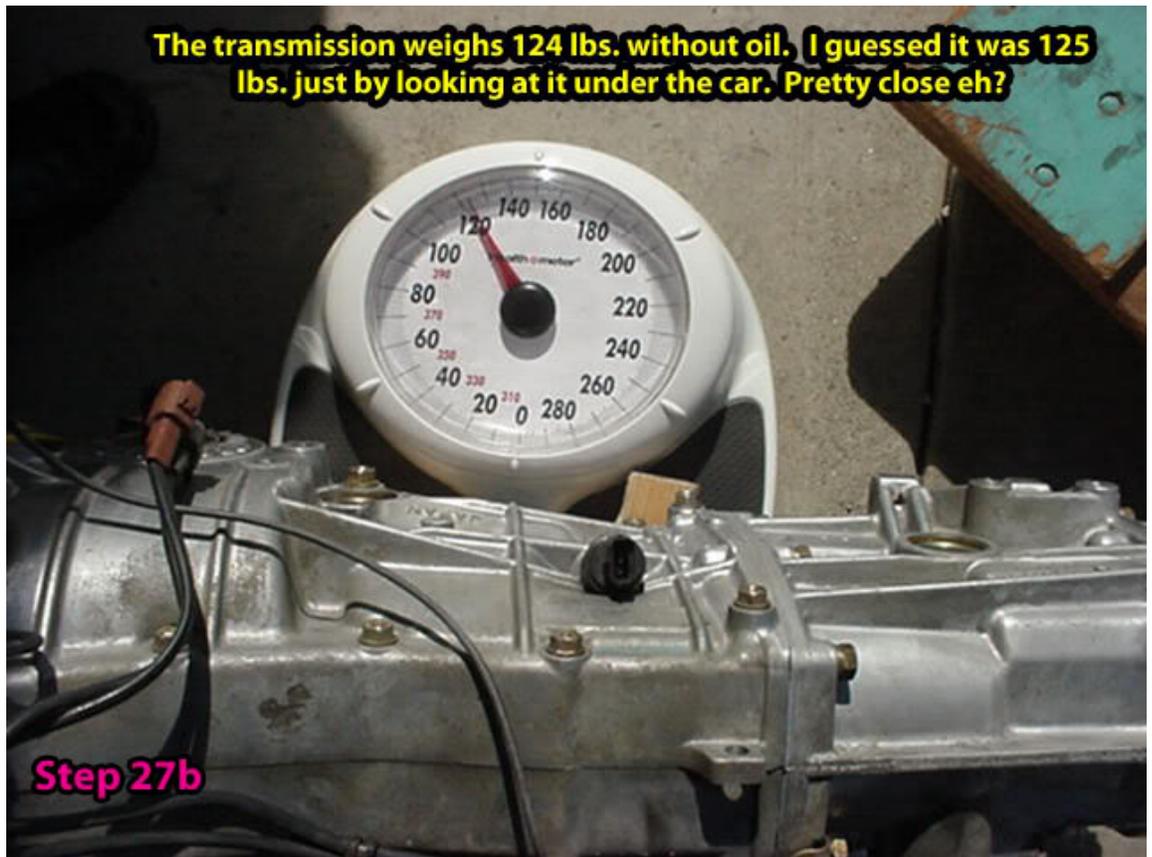
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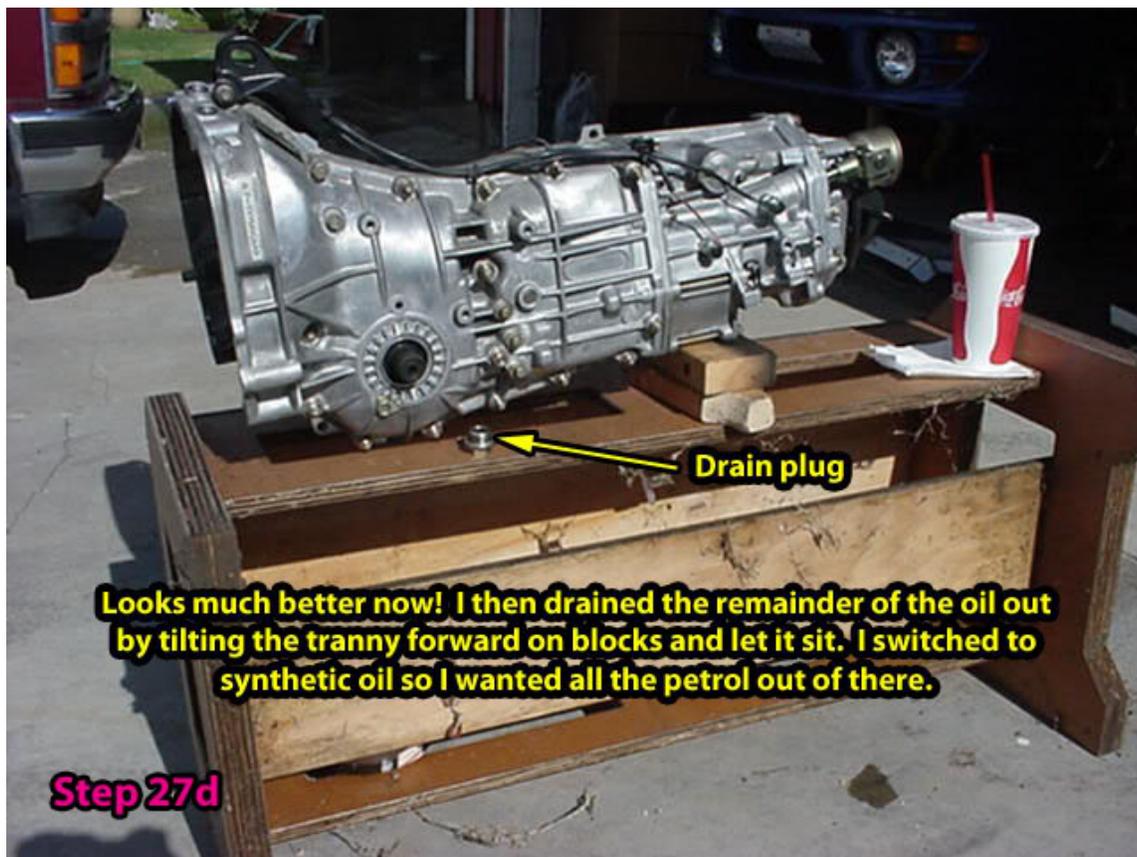
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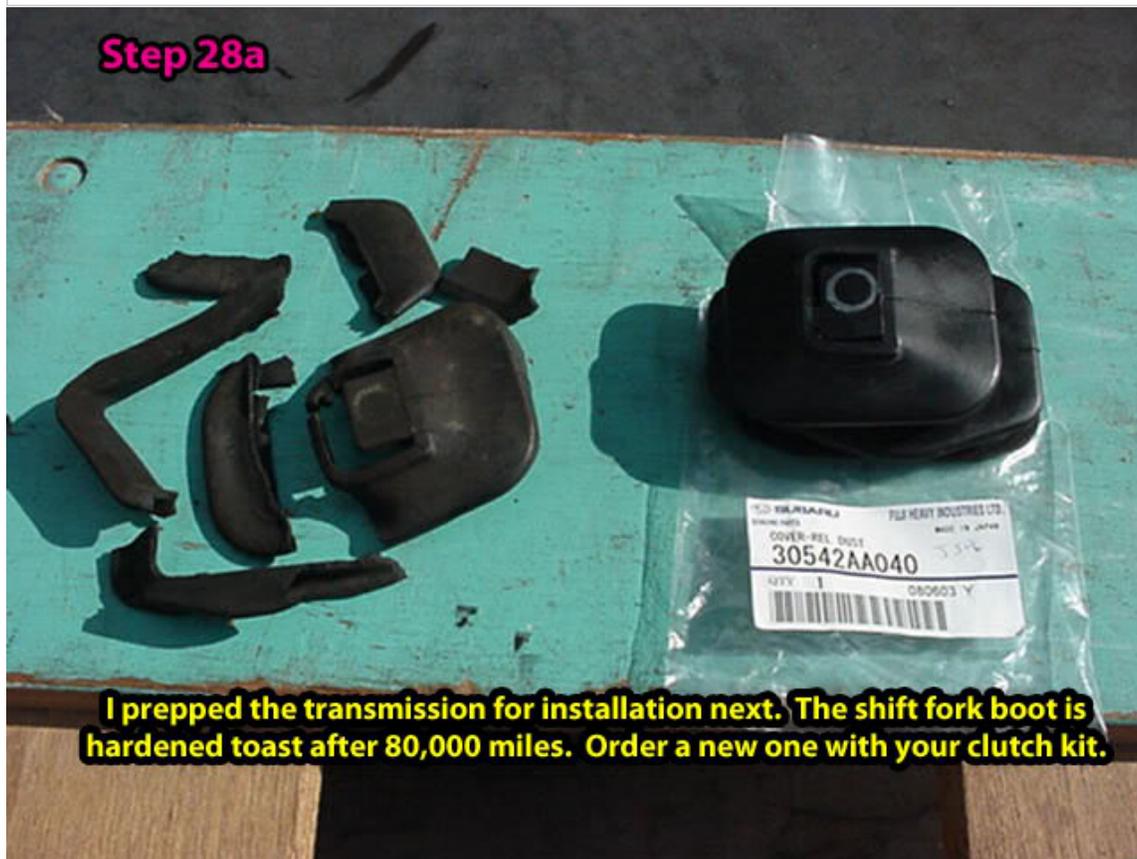
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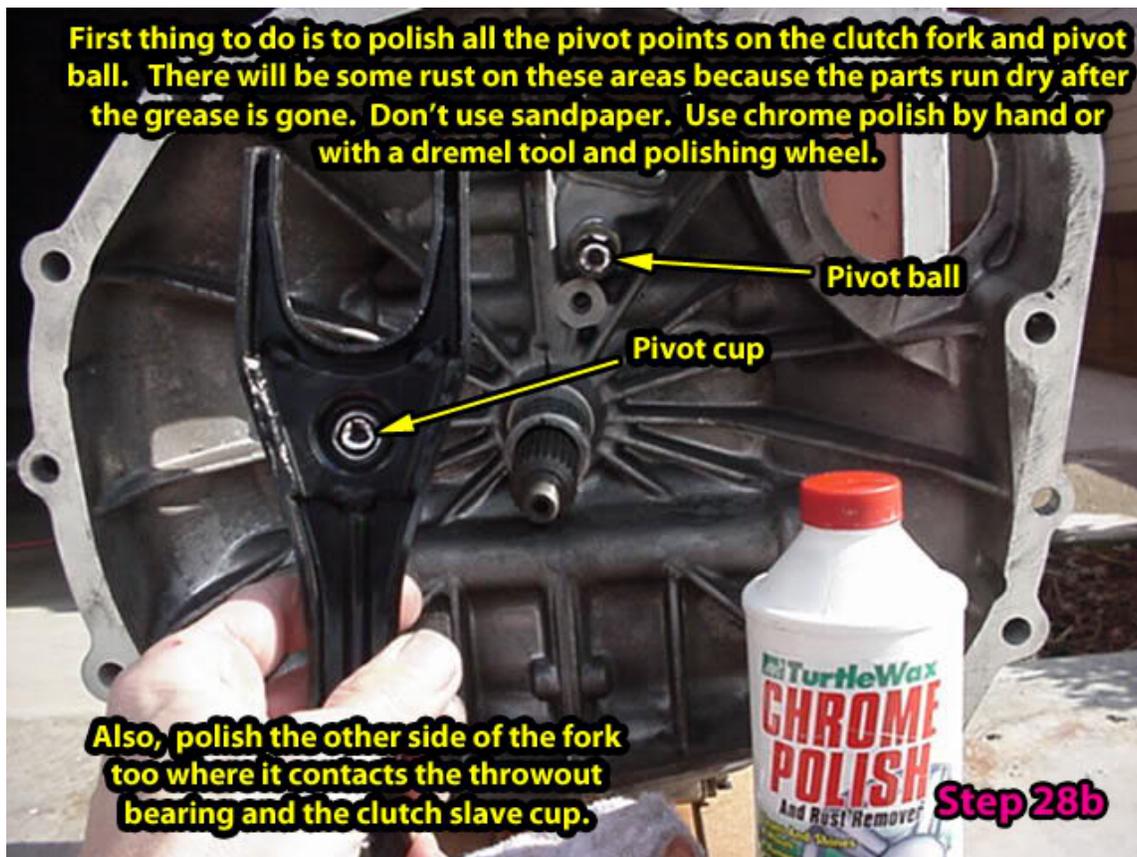
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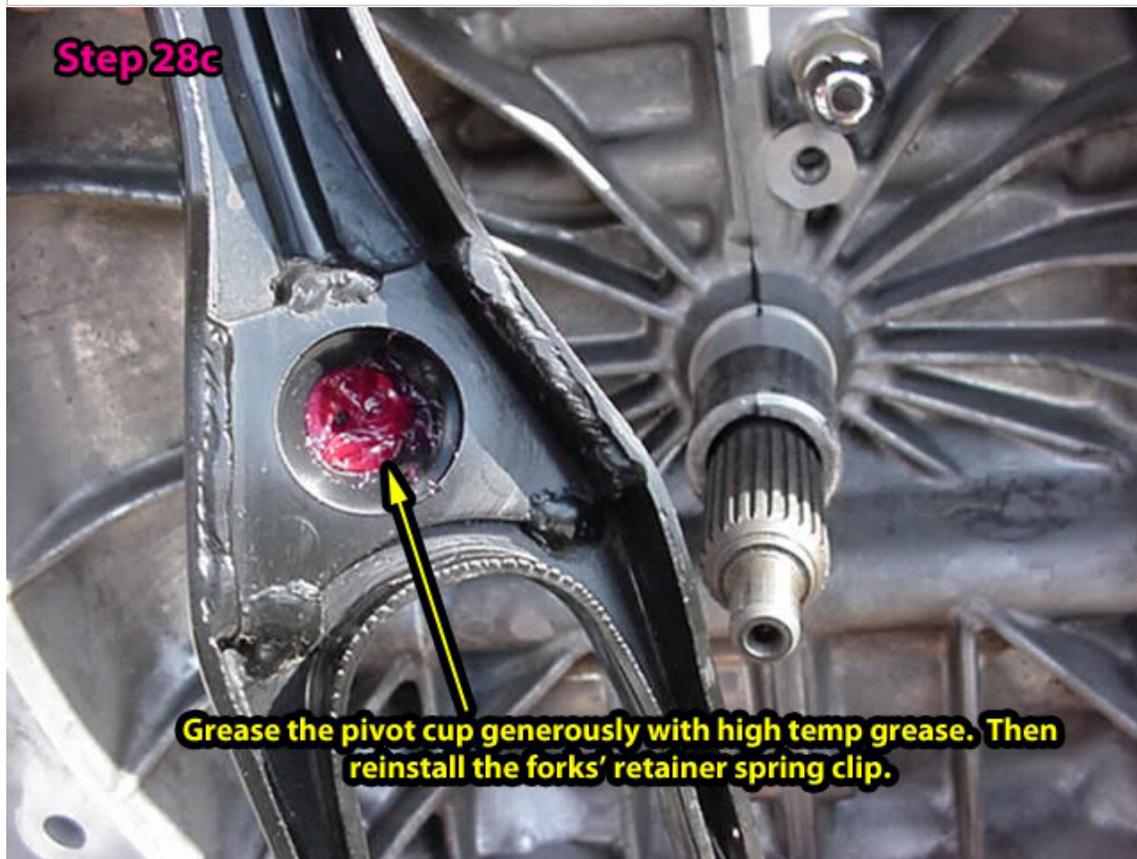
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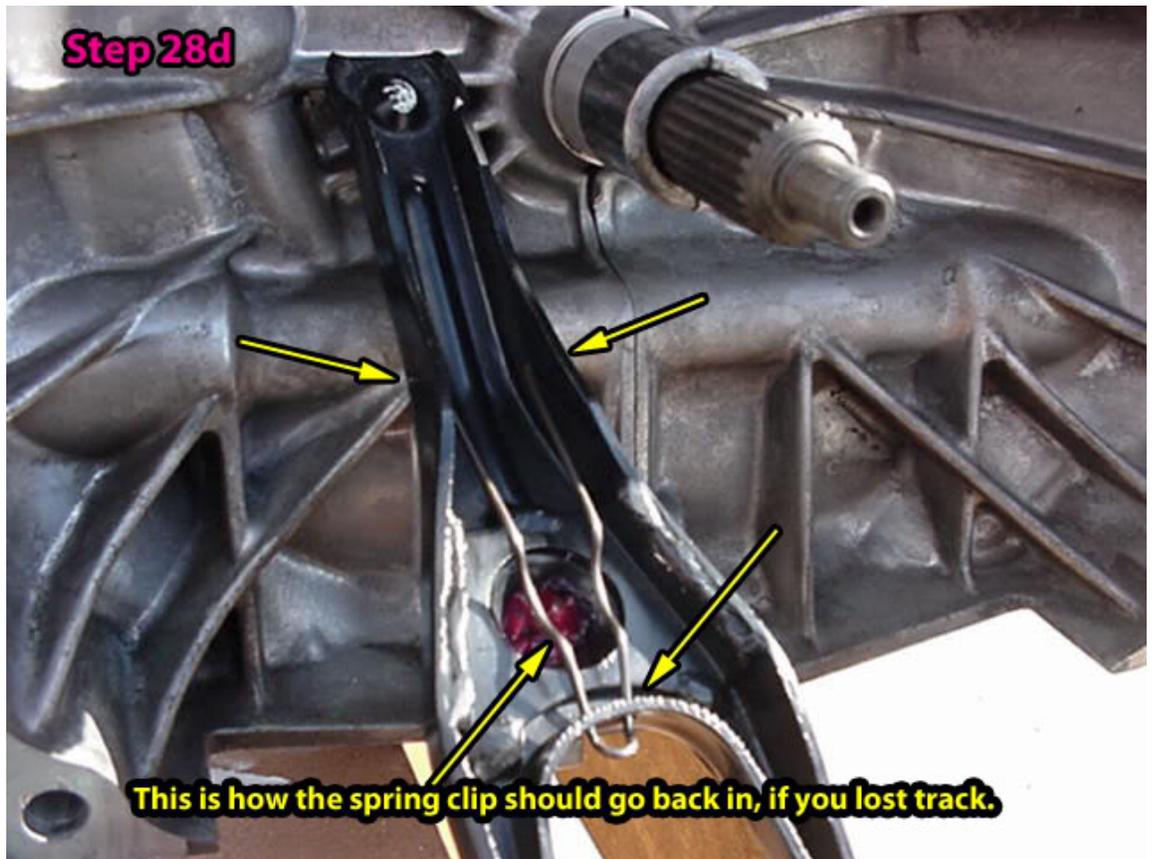
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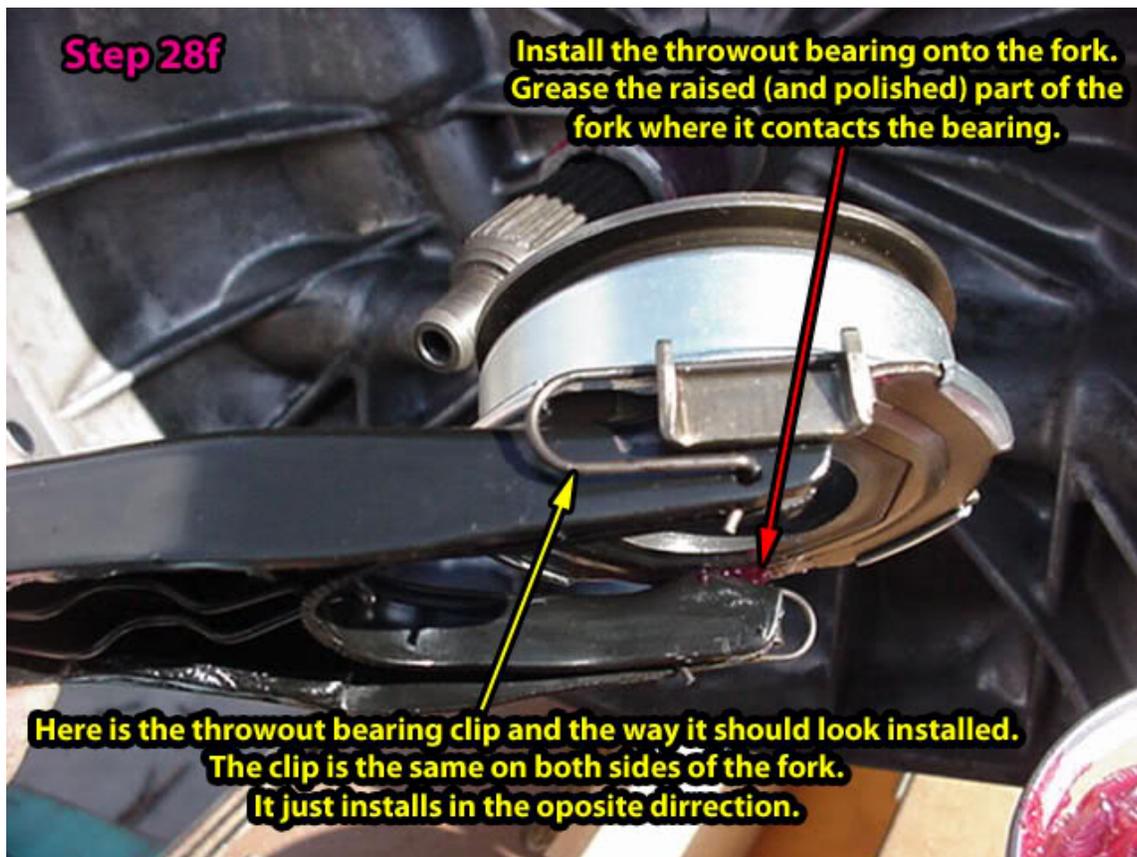
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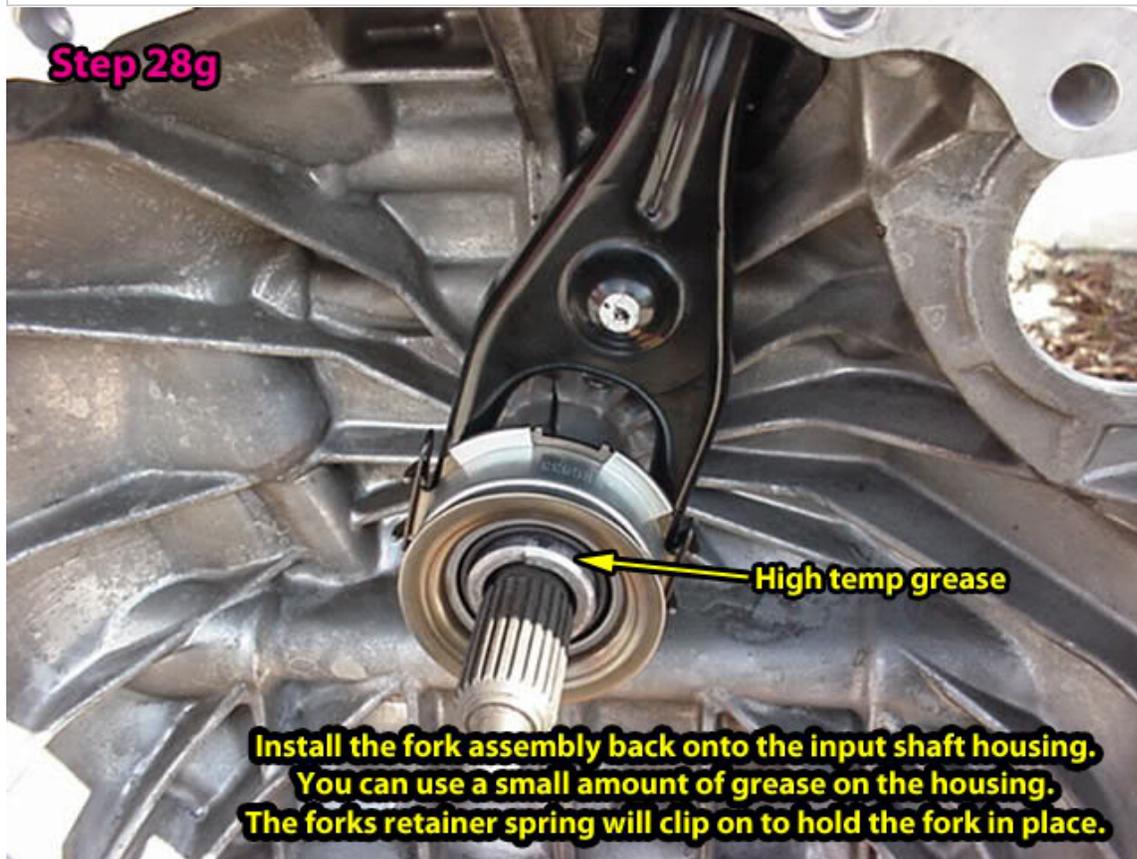
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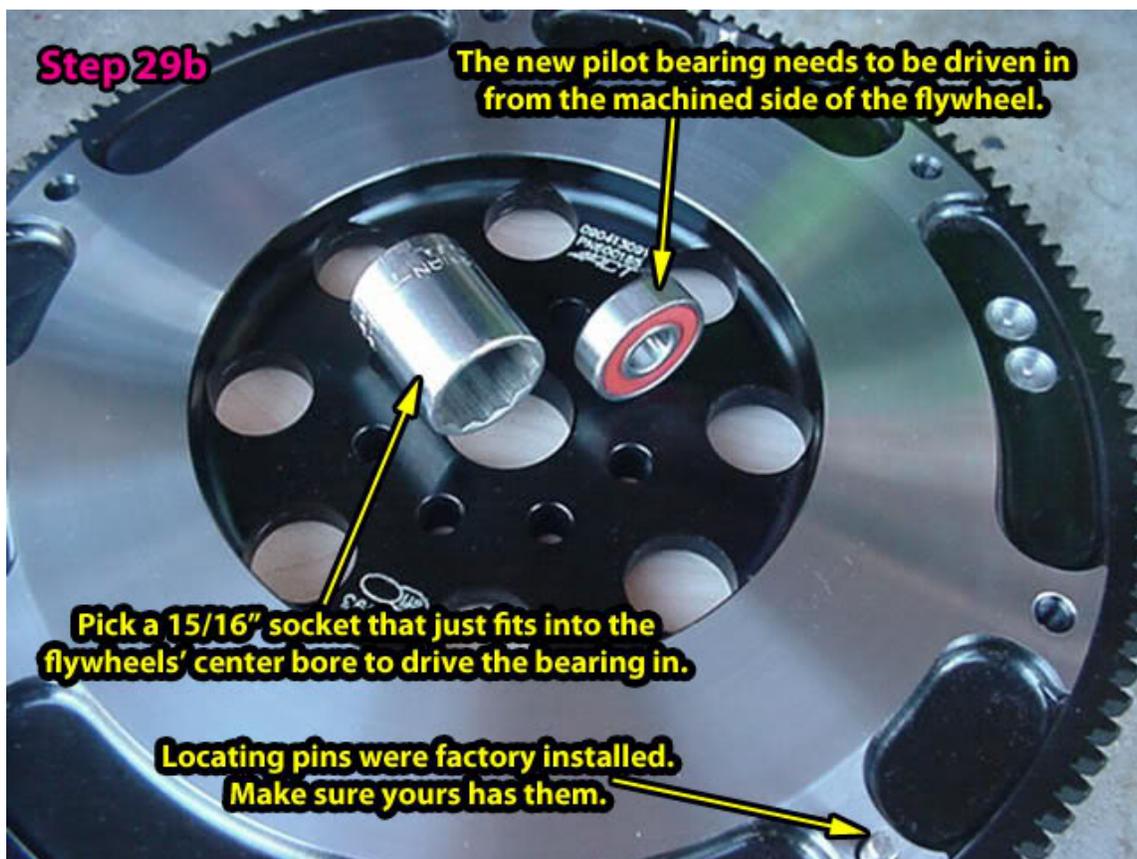
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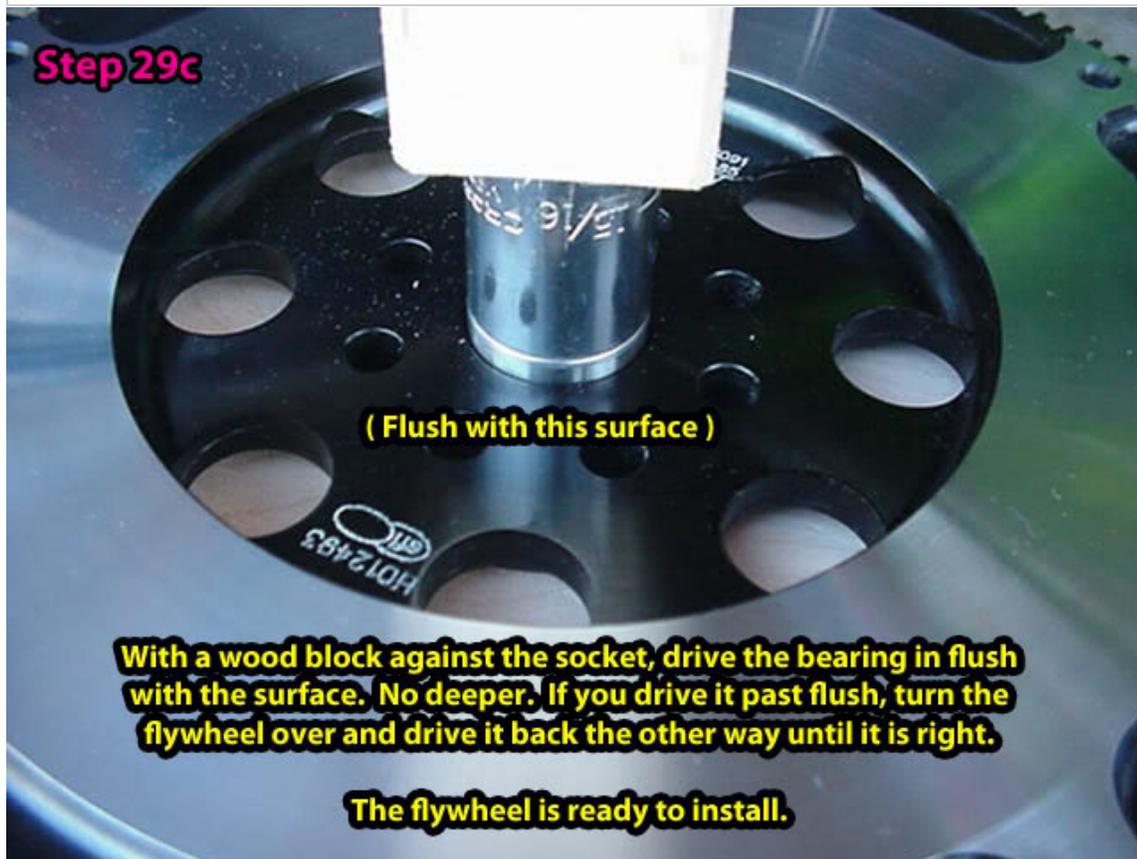
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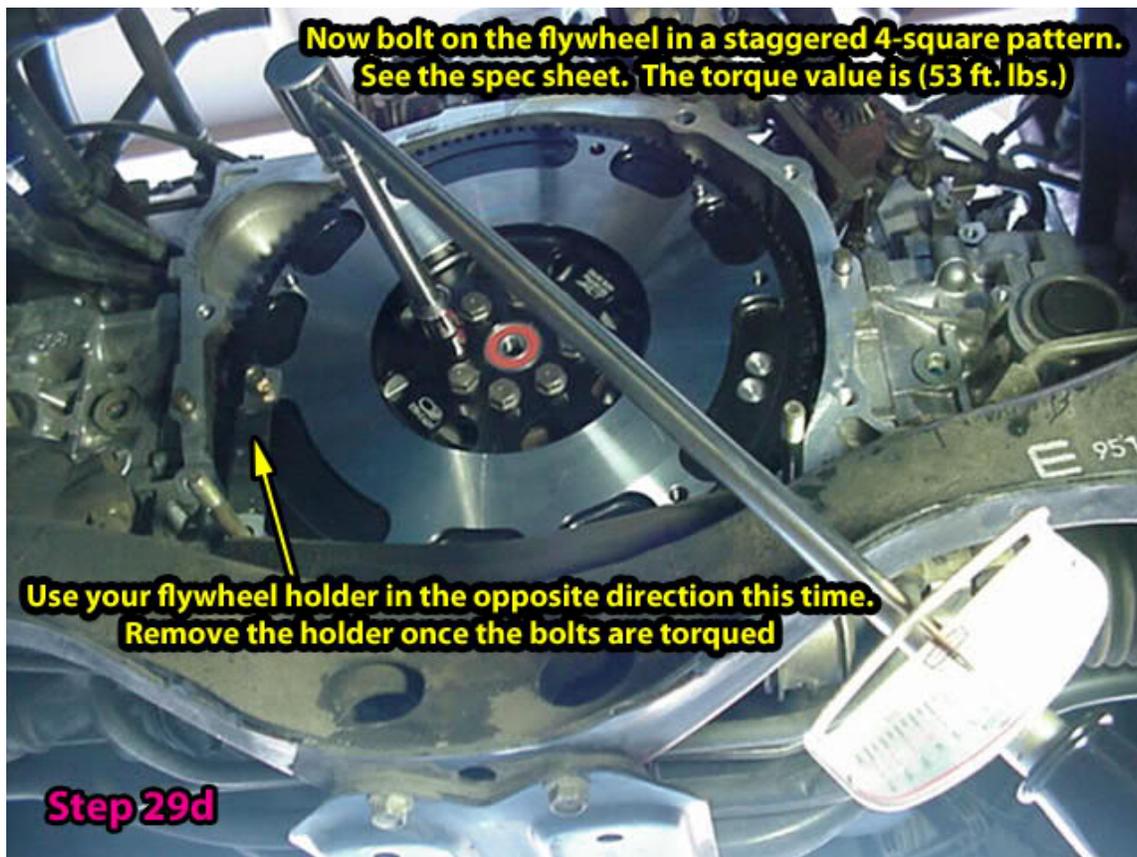
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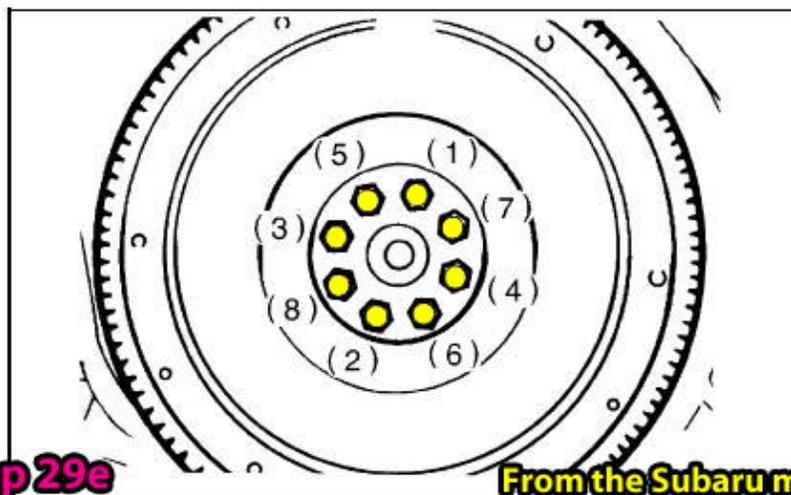
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Tighten the flywheel bolts gradually. Each bolt should be tightened to the specified torque in a criss-cross pattern.

Tightening torque:

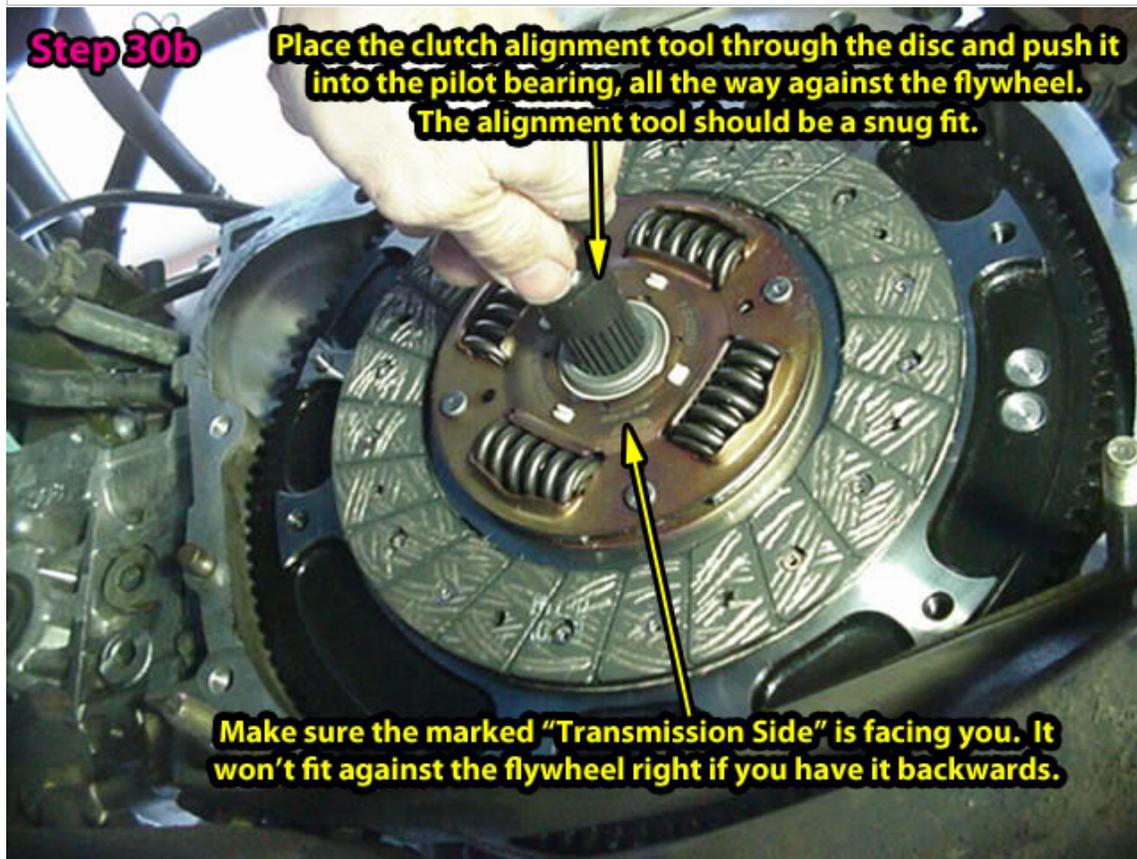
72±3 N·m (7.3±0.3 kg-m, 52.8±2.2 ft-lb)



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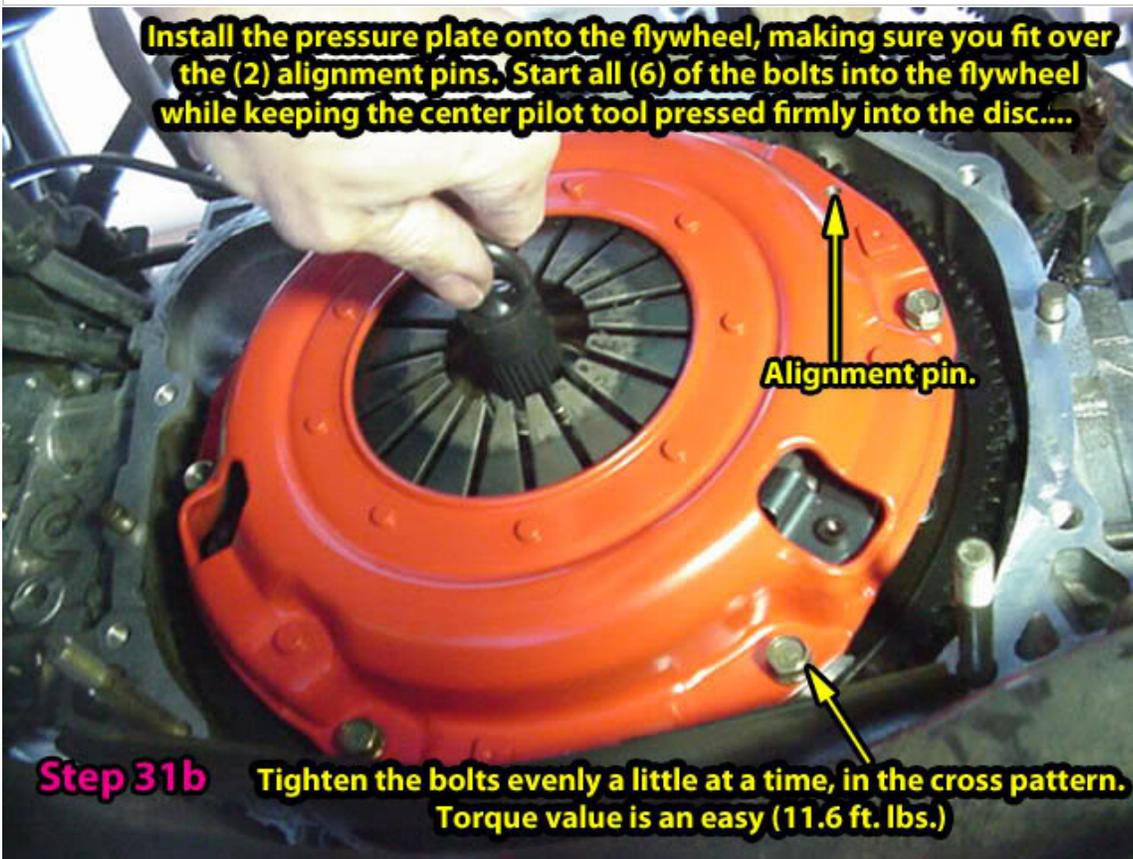
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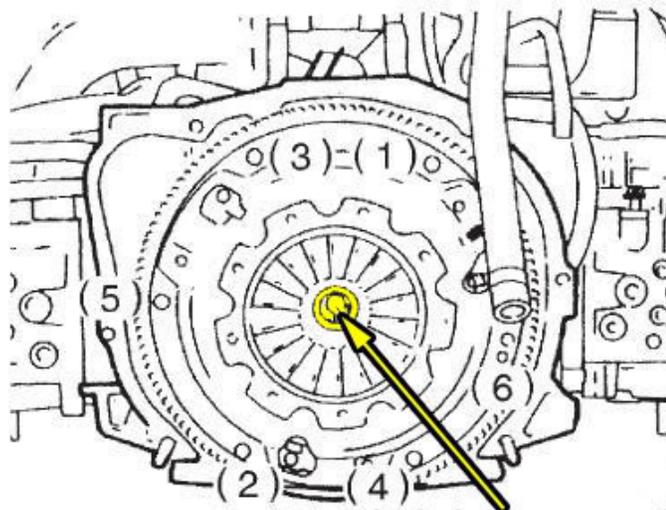
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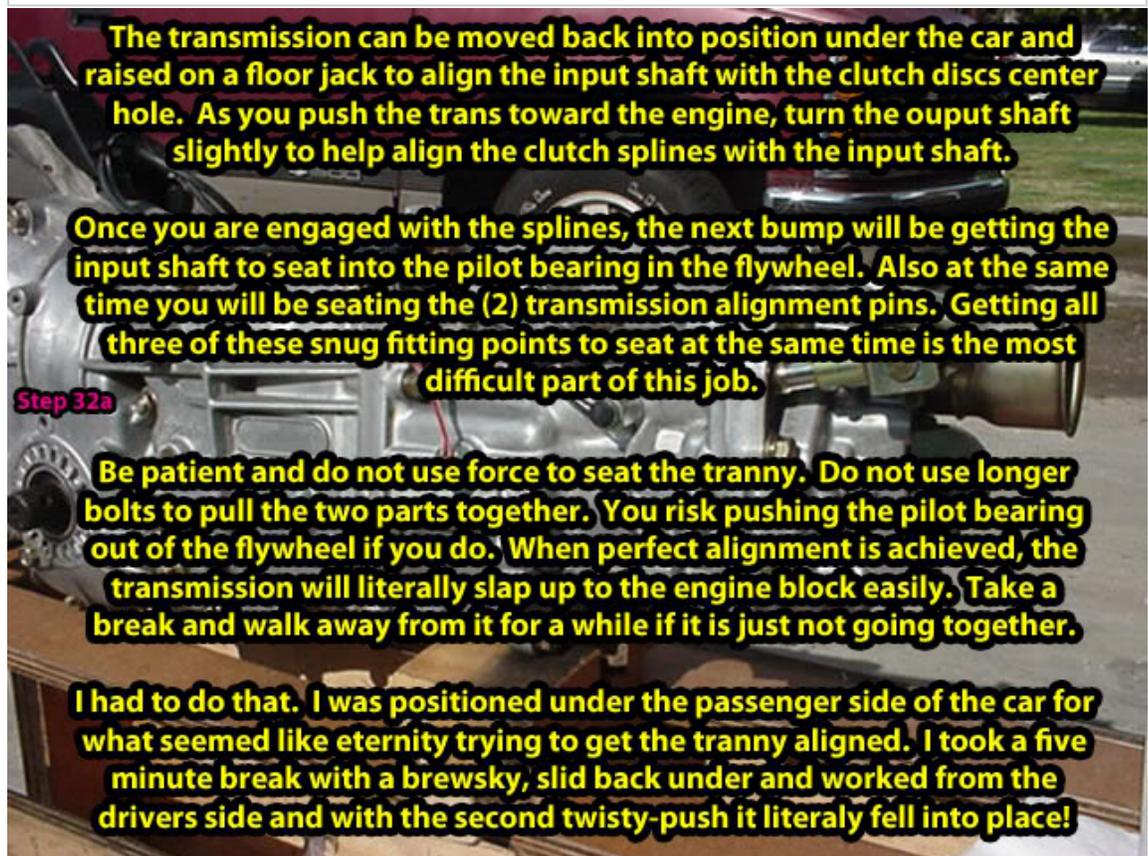
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Step 31c**From the Subaru Manual**

Once the bolts are torqued, remove the pilot alignment tool from the clutch

The clutch job is done and now the transmission can be installed...

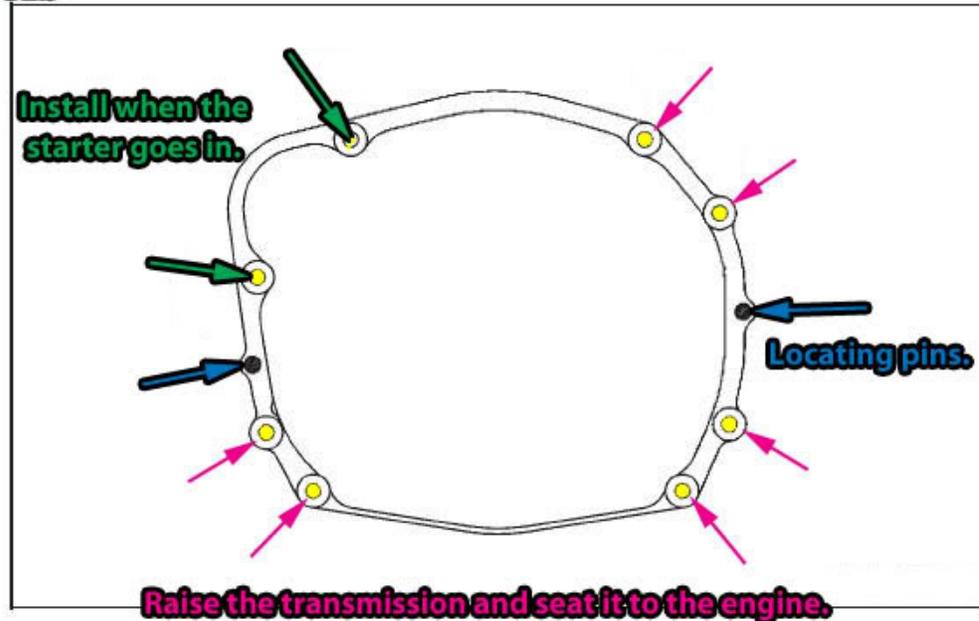
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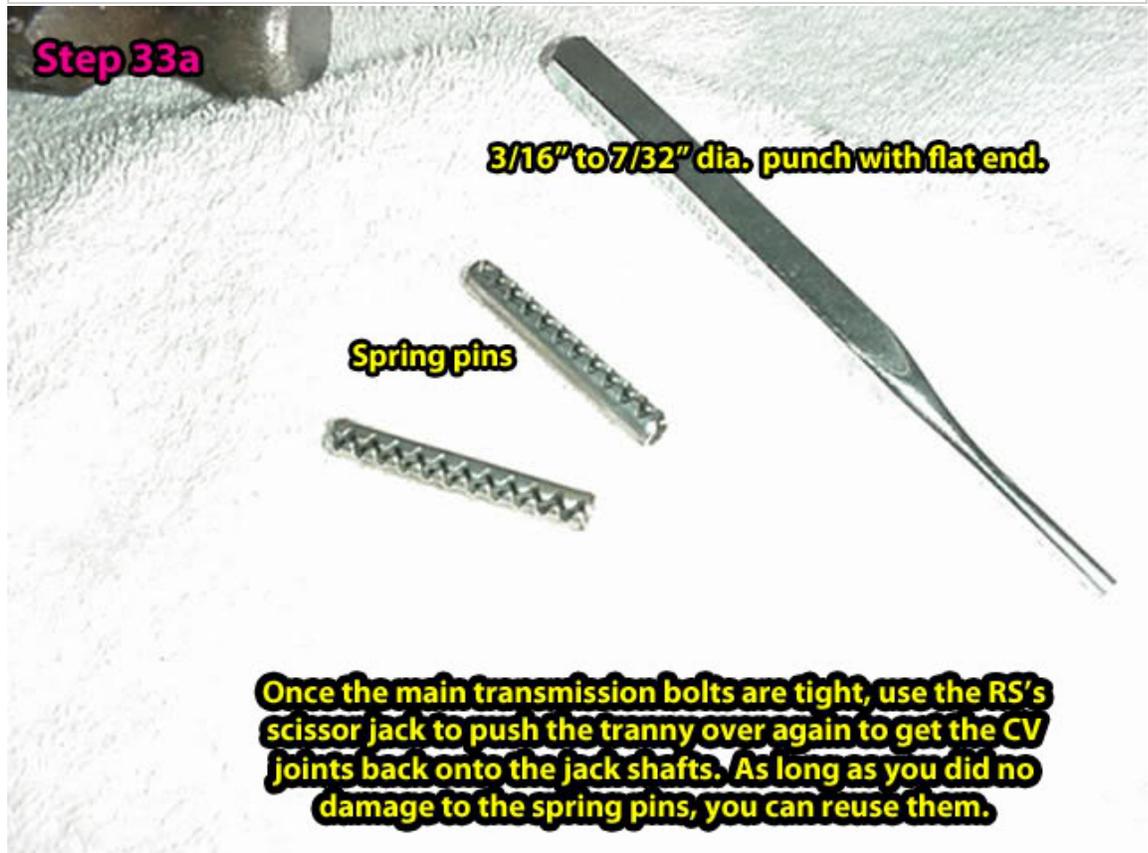
Tightening torque: **From the Subaru Manual**
 $50 \pm 4 \text{ N}\cdot\text{m}$ ($5.1 \pm 0.4 \text{ kg}\cdot\text{m}$, $36.9 \pm 2.9 \text{ ft}\cdot\text{lb}$)

Step 32b

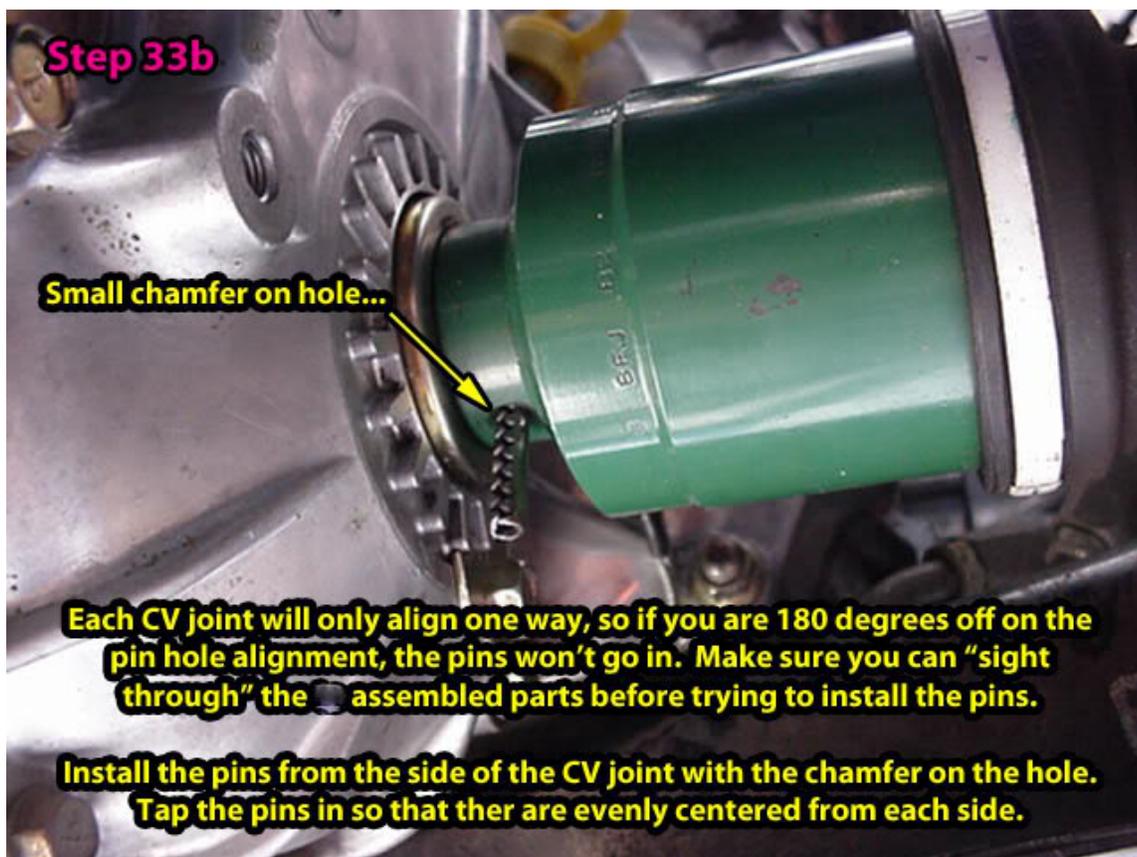


Tighten the (4) bolts and (2) nuts at the transmission to the engine.
Torque value: (36.9 ft. lbs.)

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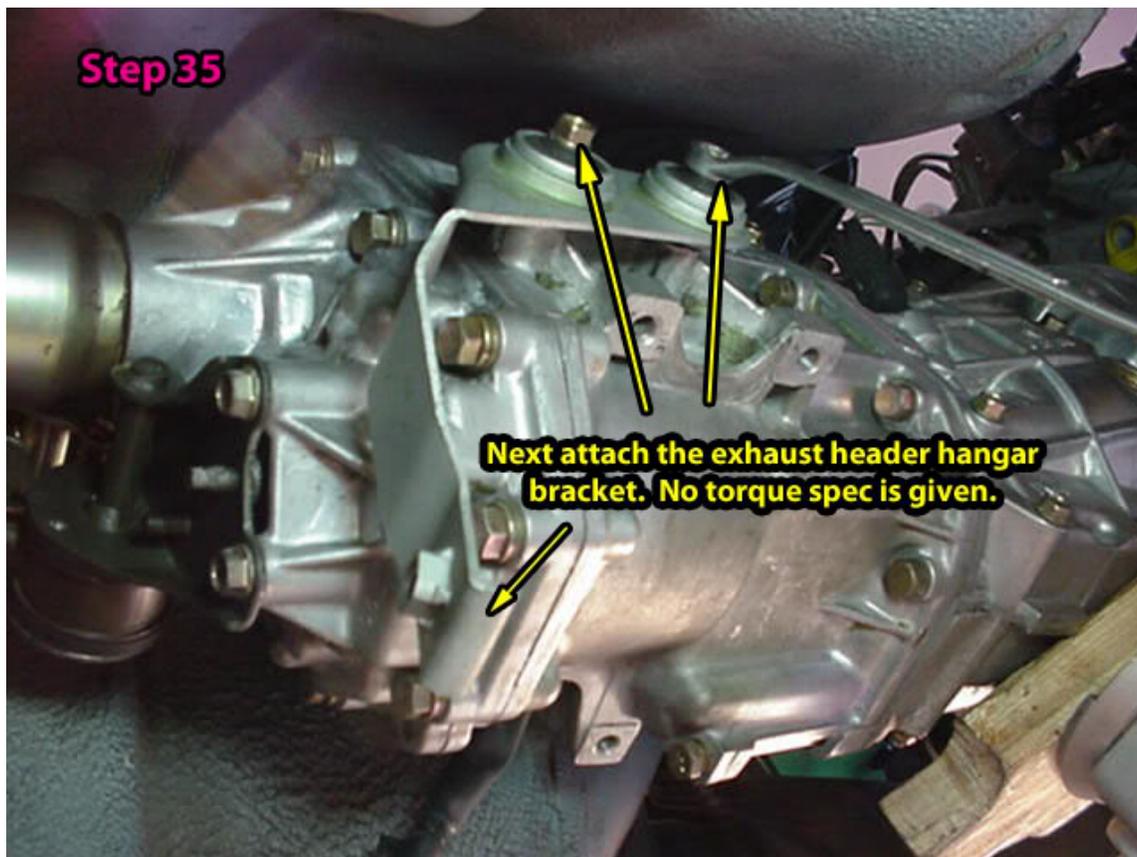
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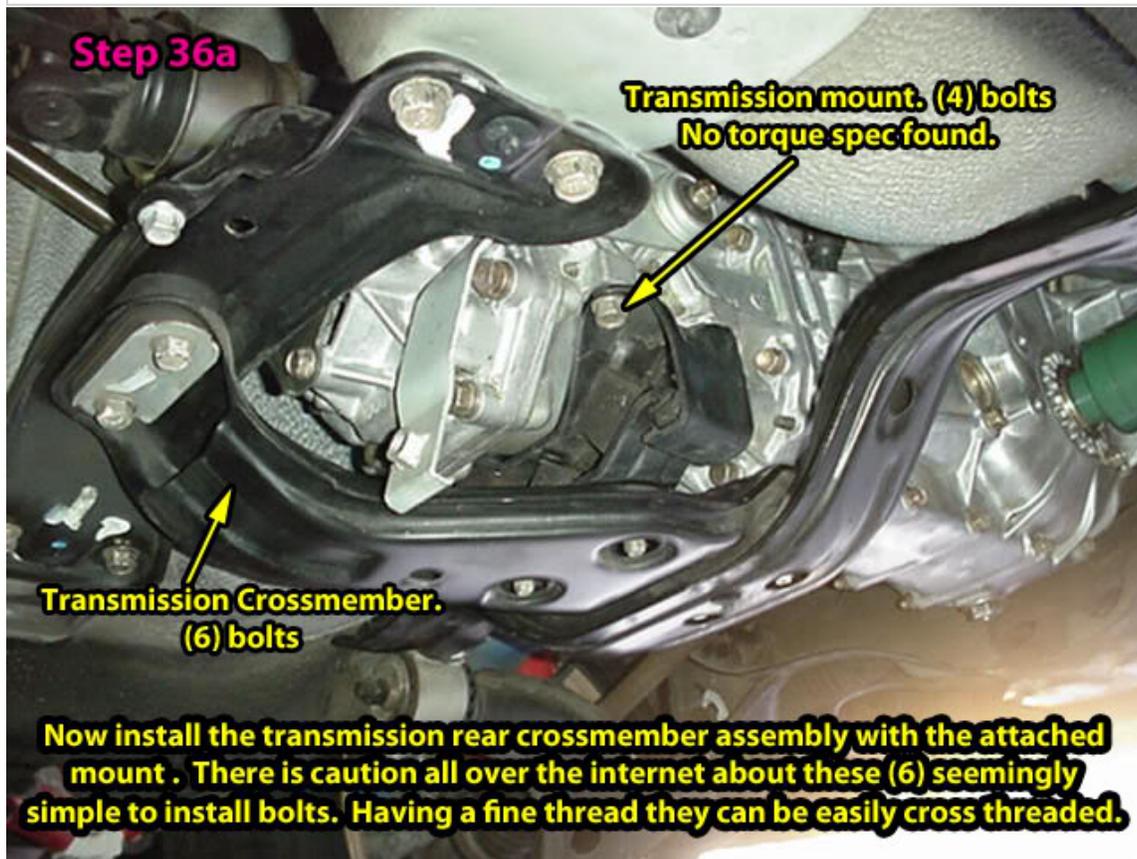
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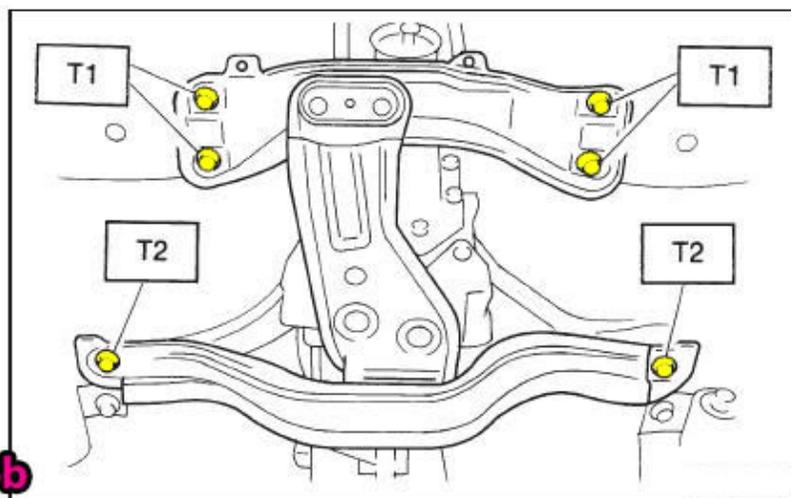
- MT vehicles

From the Subaru manual

Tightening torque:

T1: 69 ± 15 N·m (7.0 ± 1.5 kg-m, 51 ± 11 ft-lb)

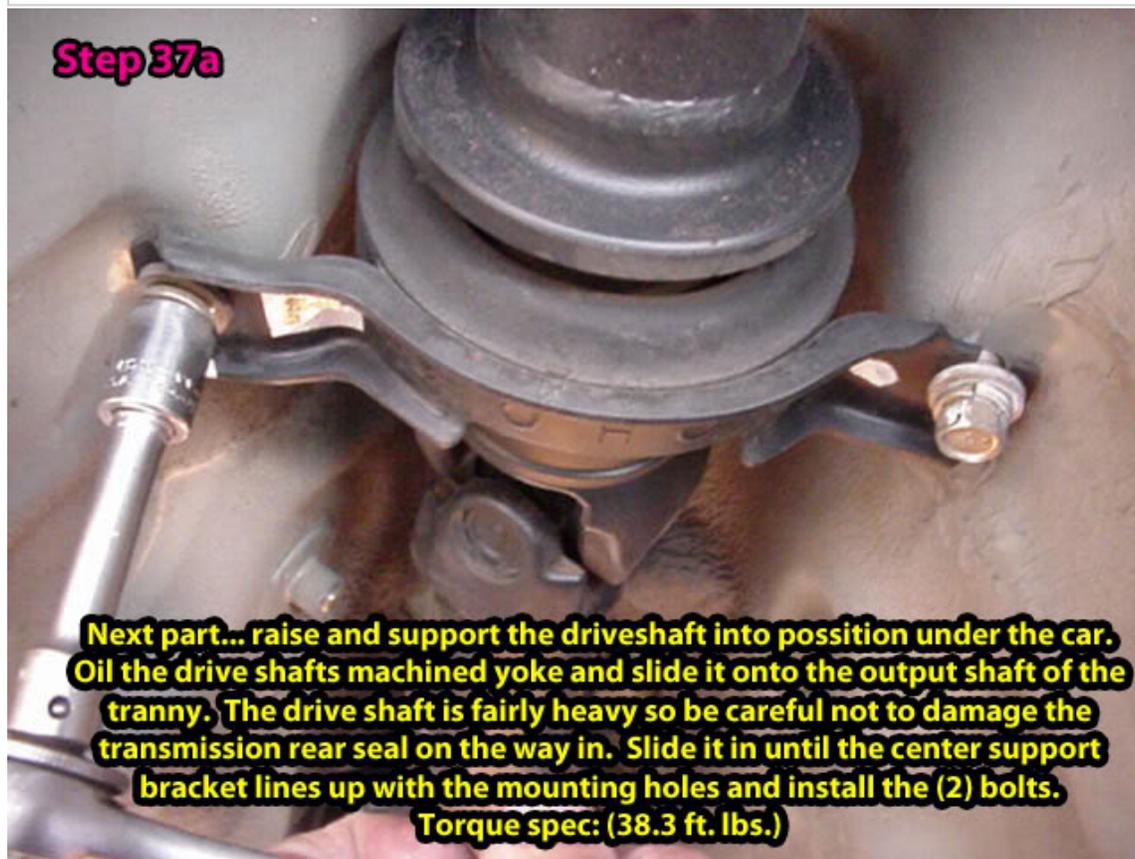
T2: 137 ± 20 N·m (14 ± 2 kg-m, 101 ± 14 ft-lb)



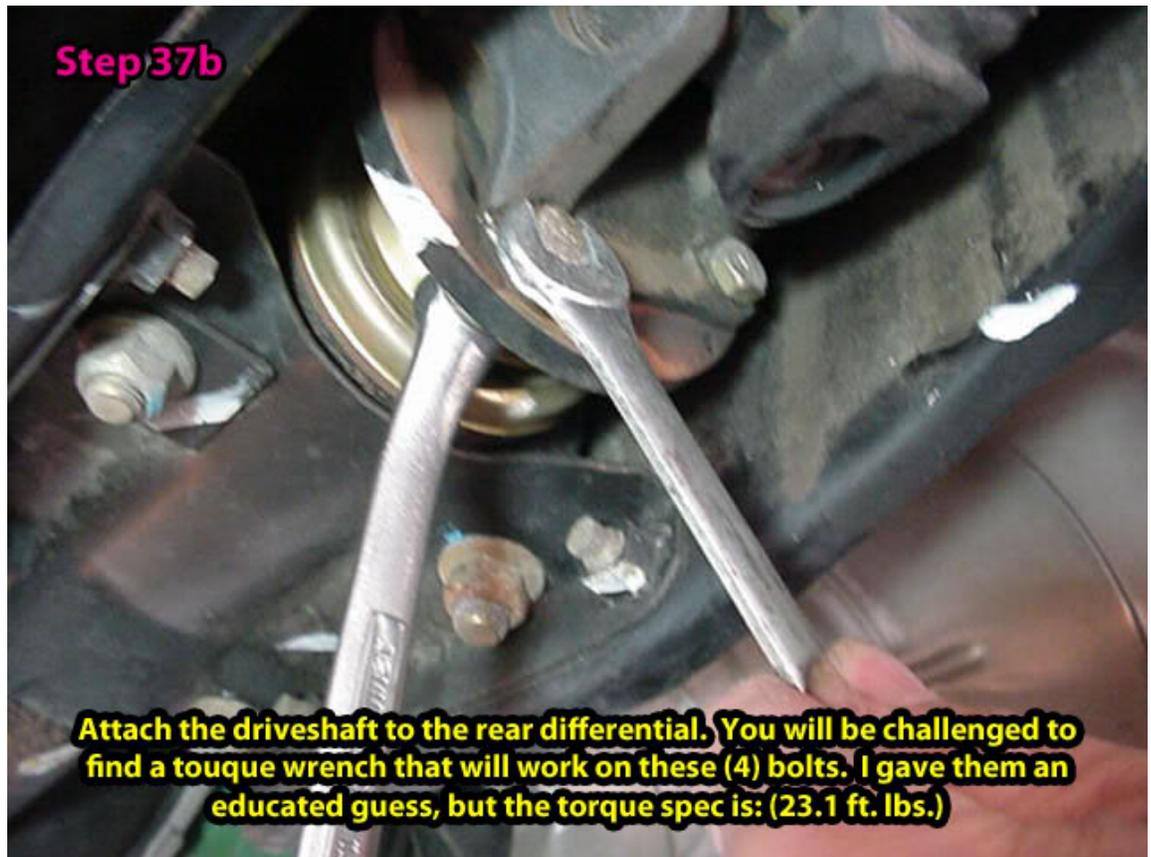
Step 36b

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Step 37a



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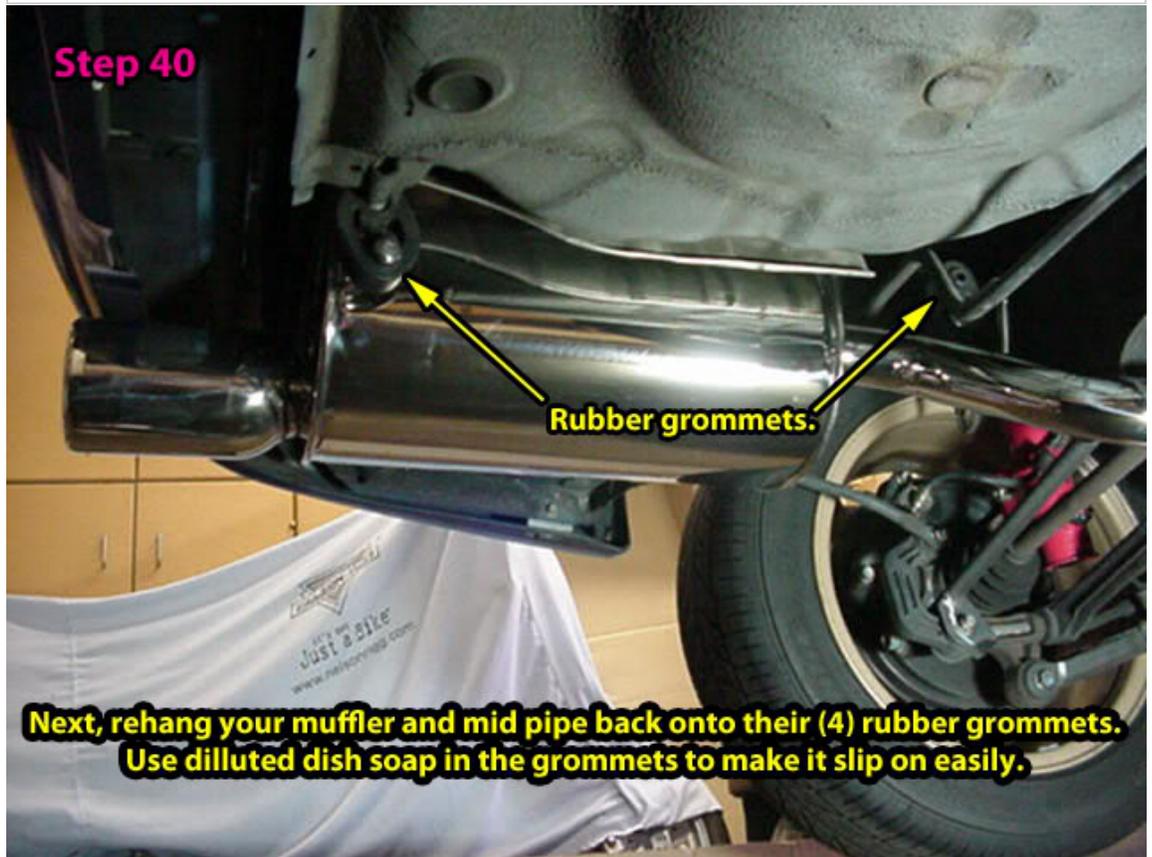
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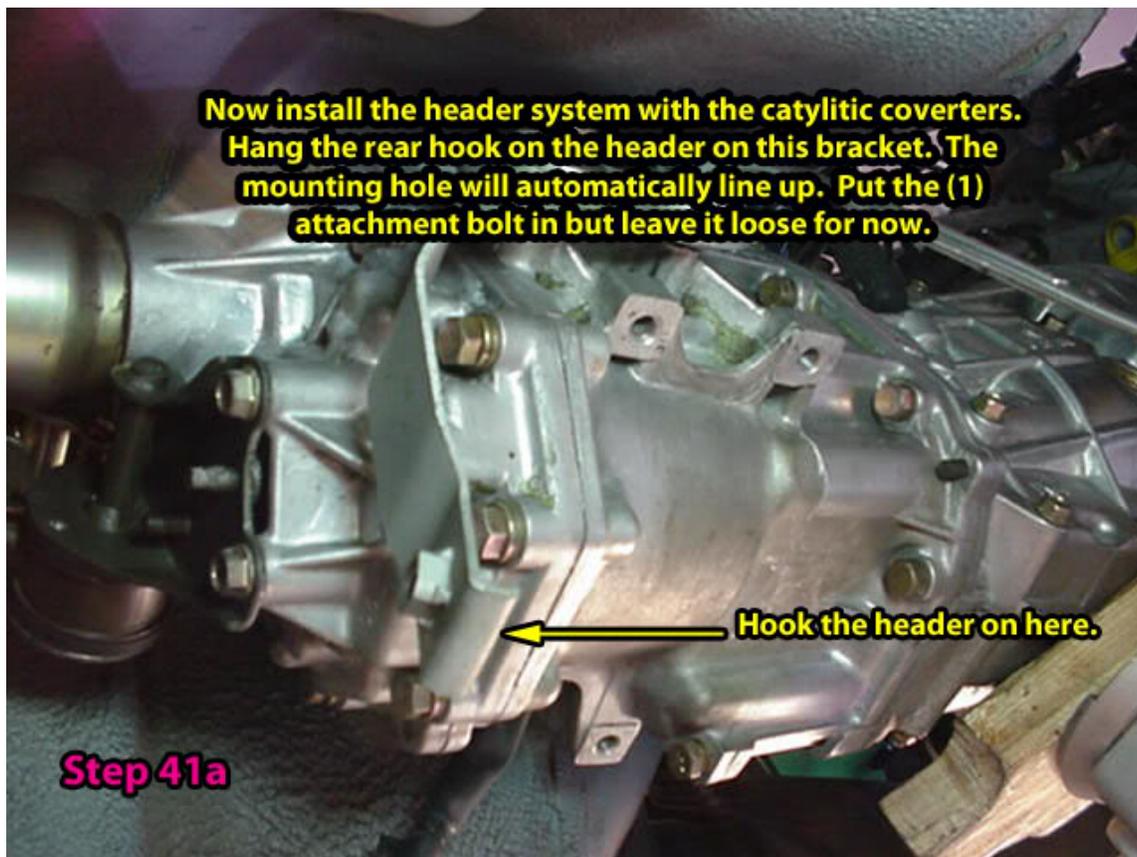
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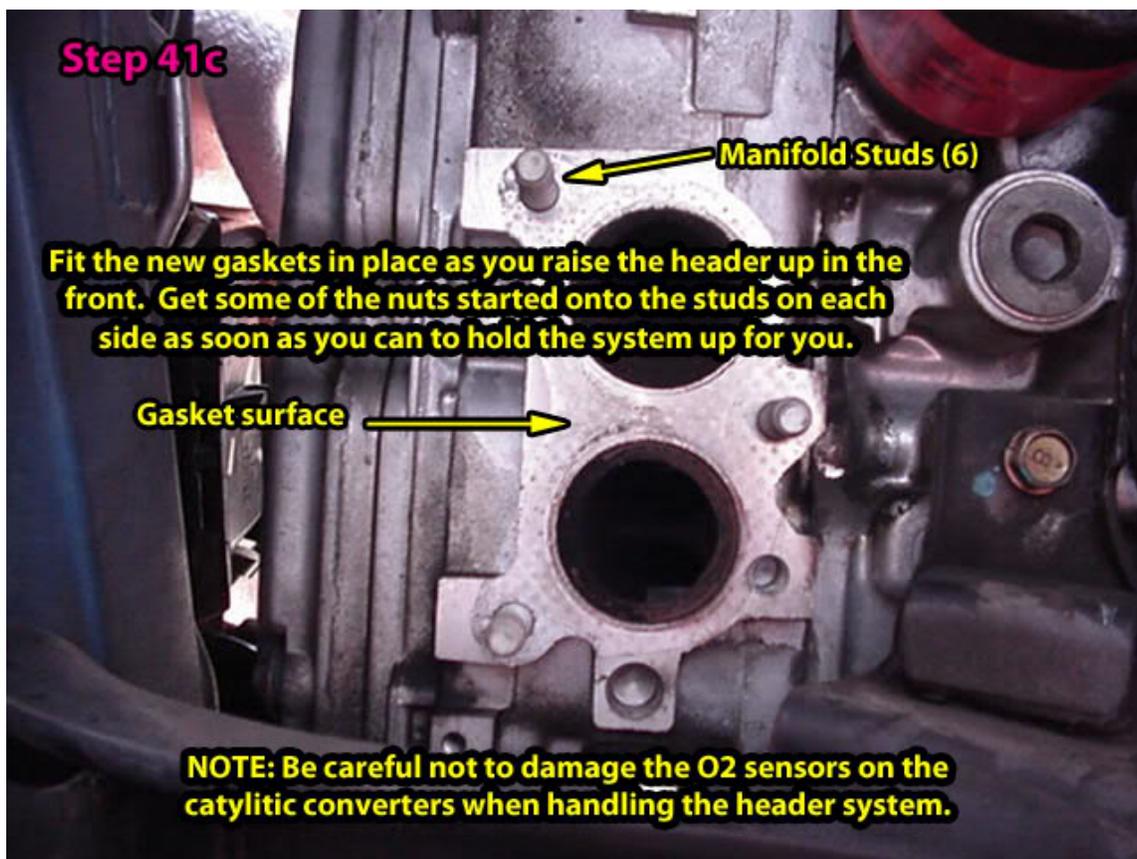
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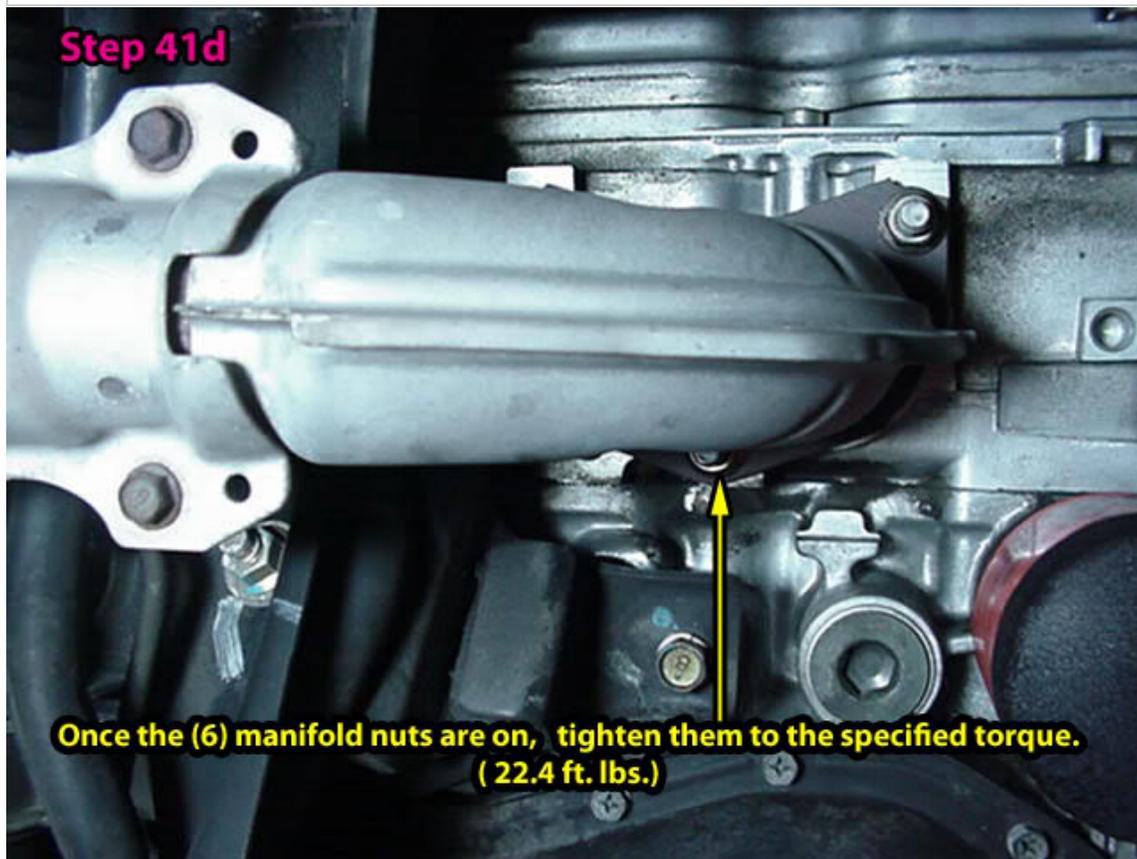
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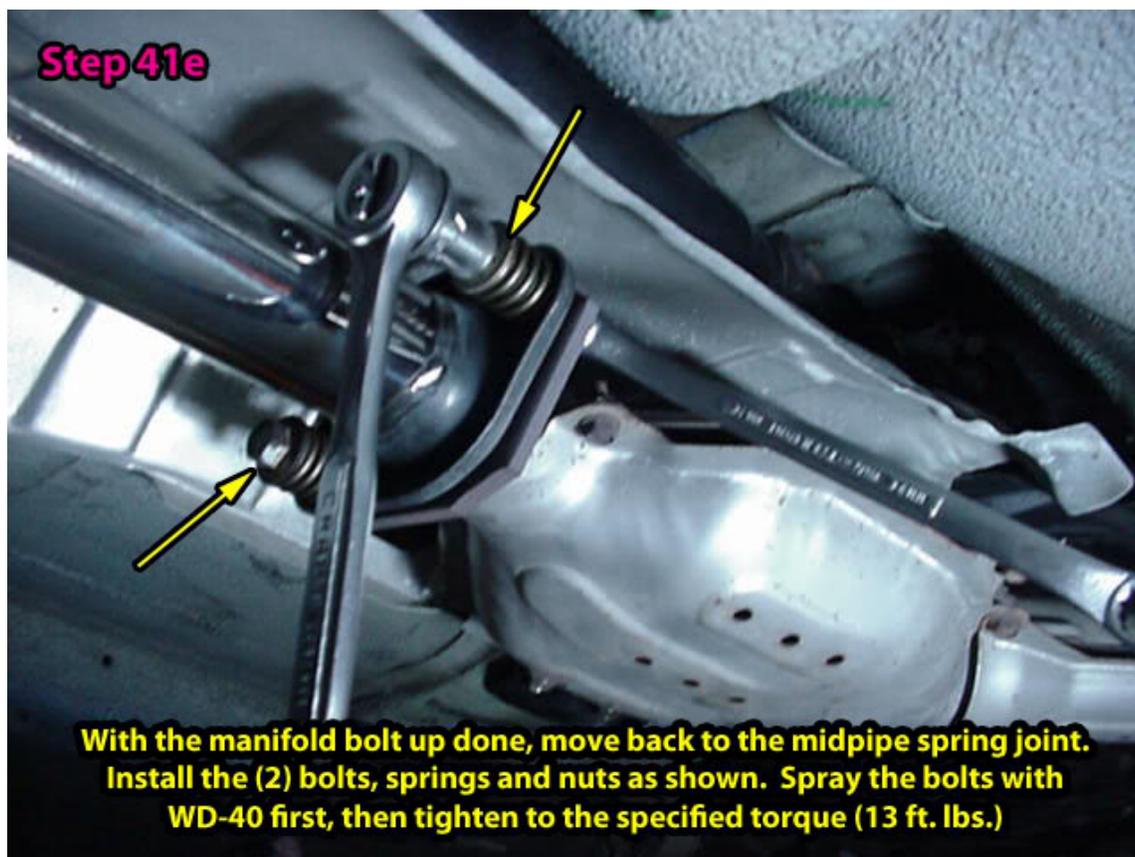
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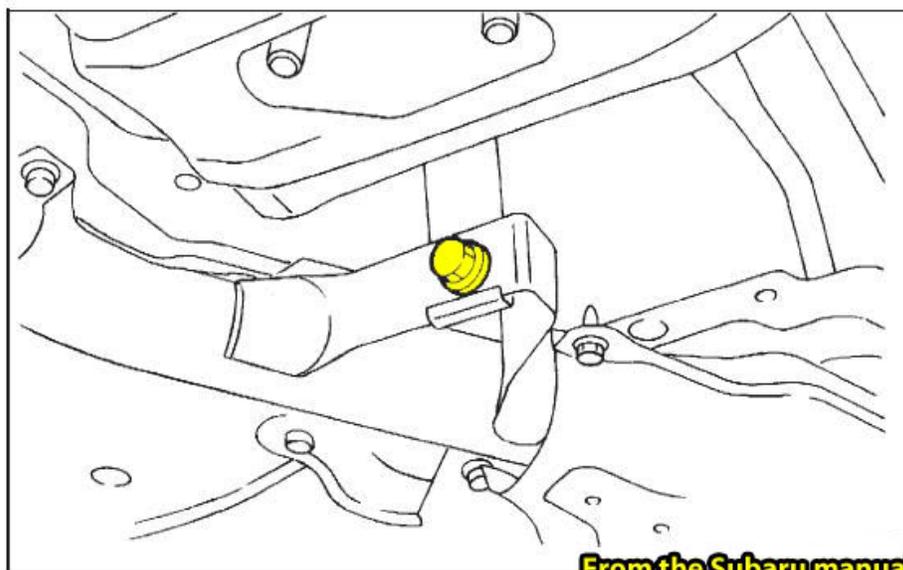
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Step 41f

For the final exhaust related task, tighten the exhaust hanger bolt to the specified torque. Use some WD-40 on this bolt too.

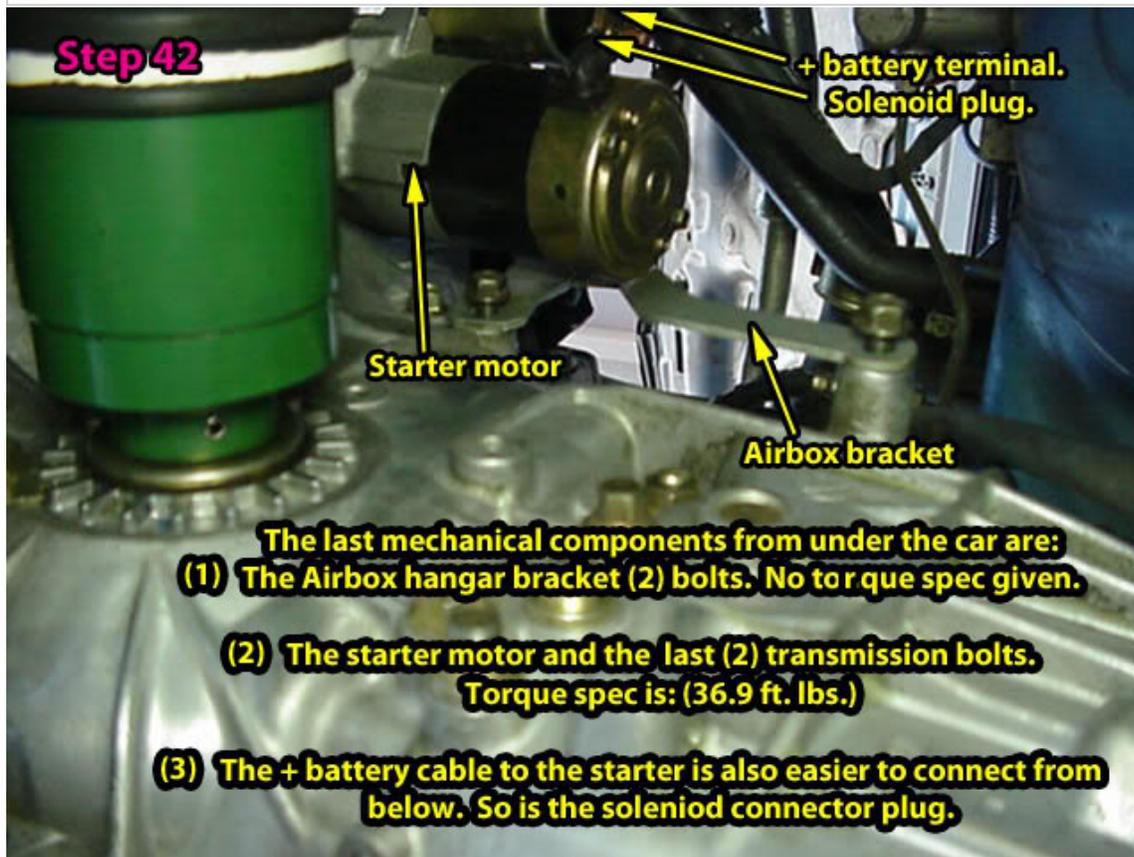
Tightening torque:

35 ± 5 N·m (3.6 ± 0.5 kg·m, 26.0 ± 3.6 ft·lb)



From the Subaru manual

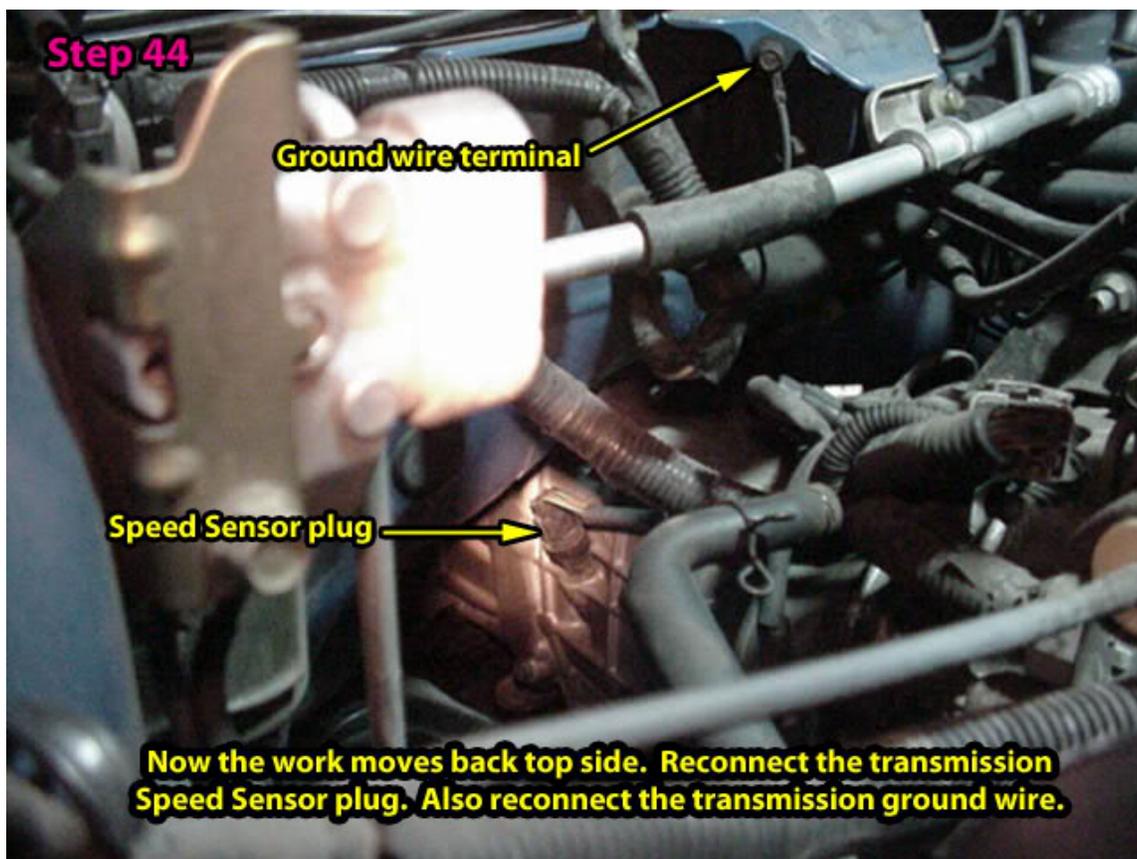
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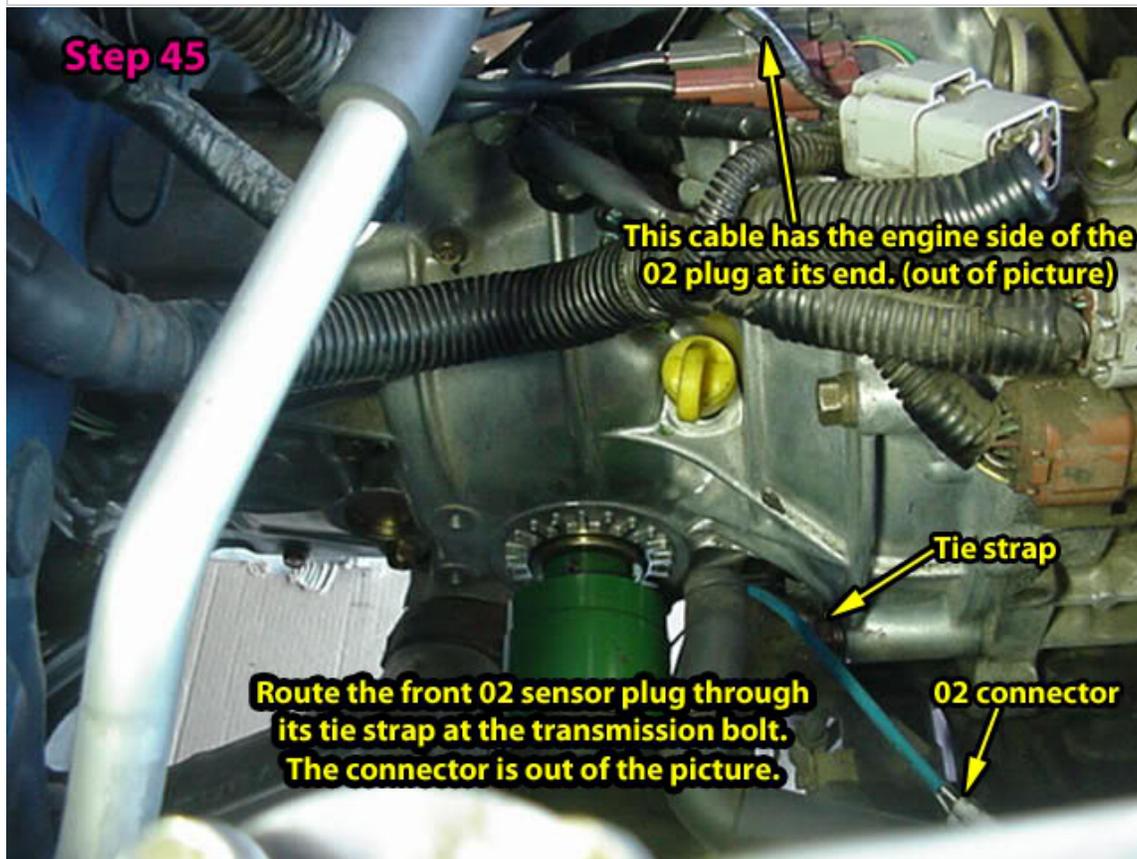
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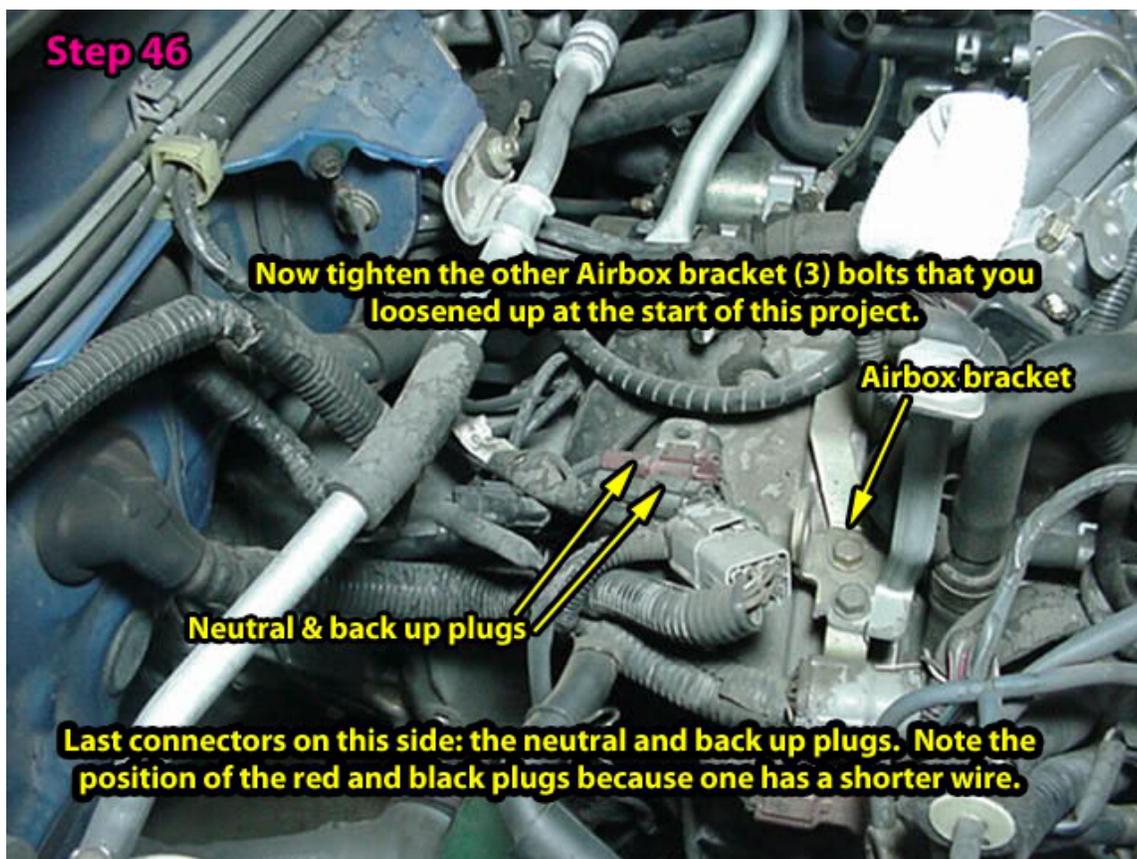
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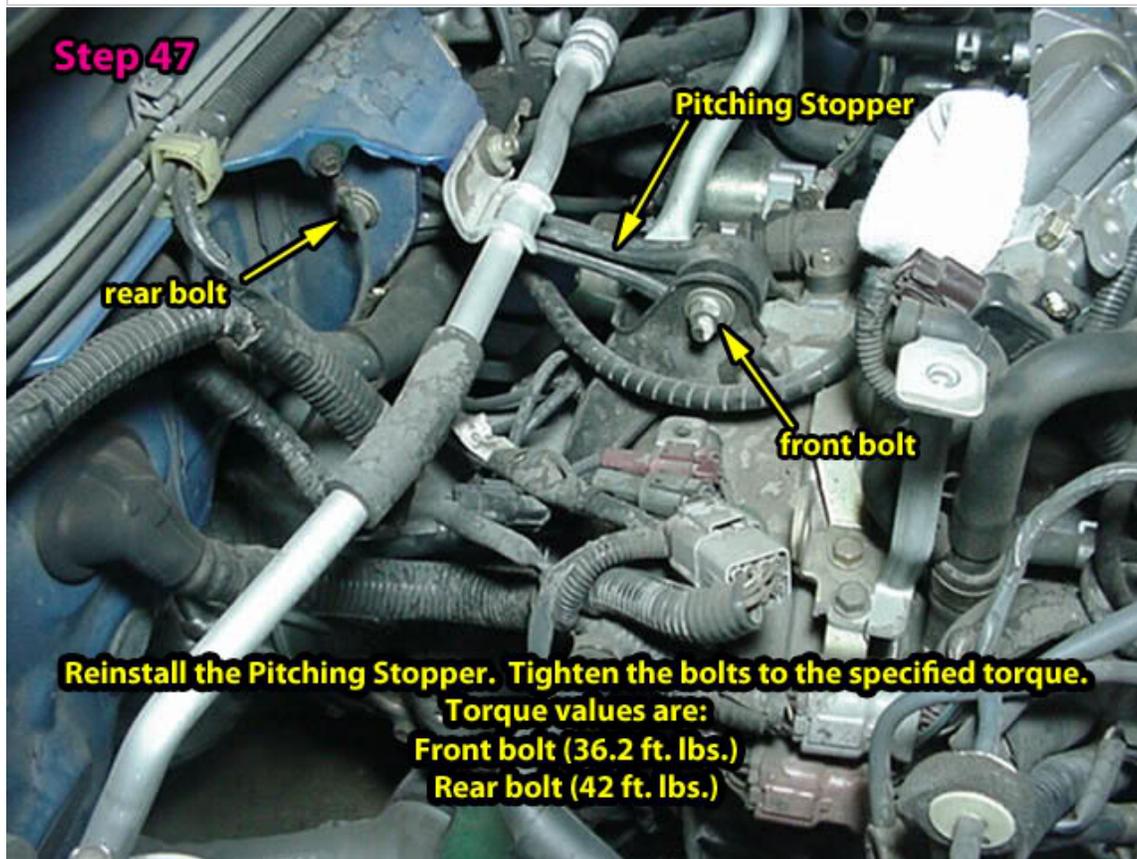
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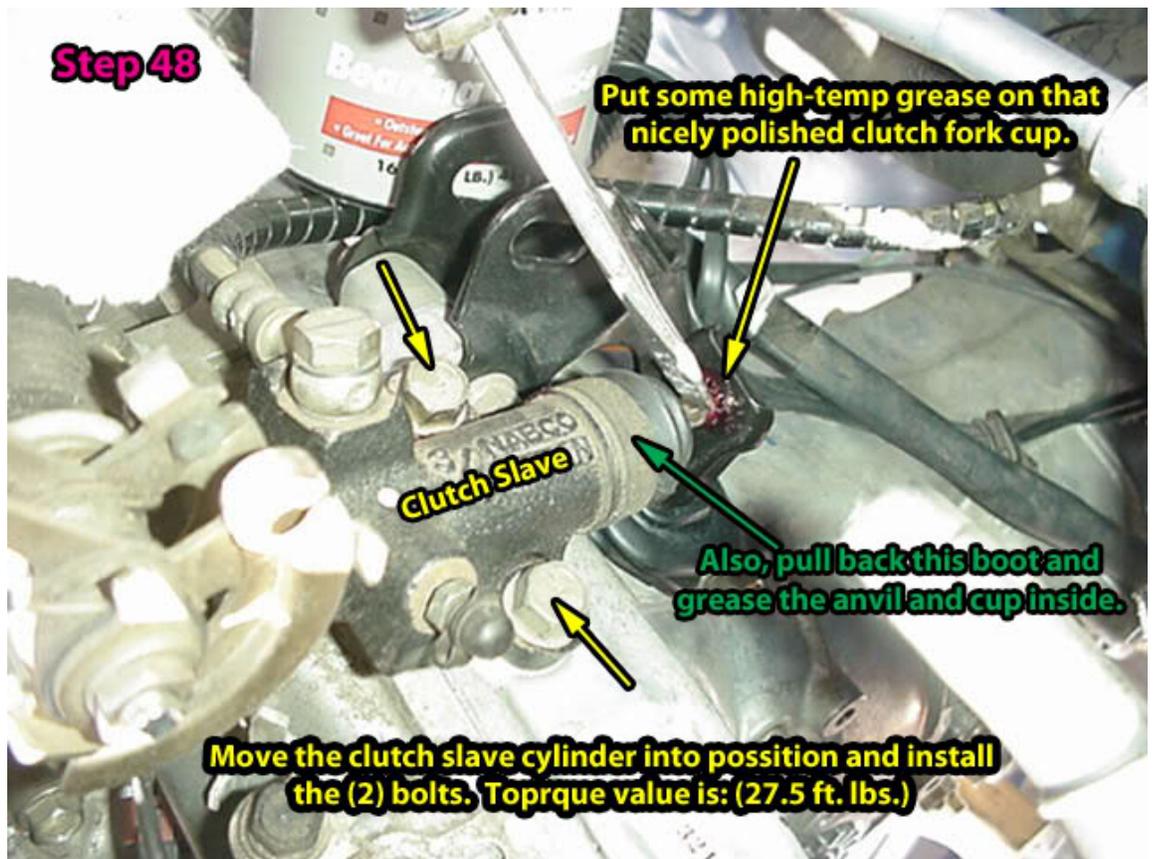
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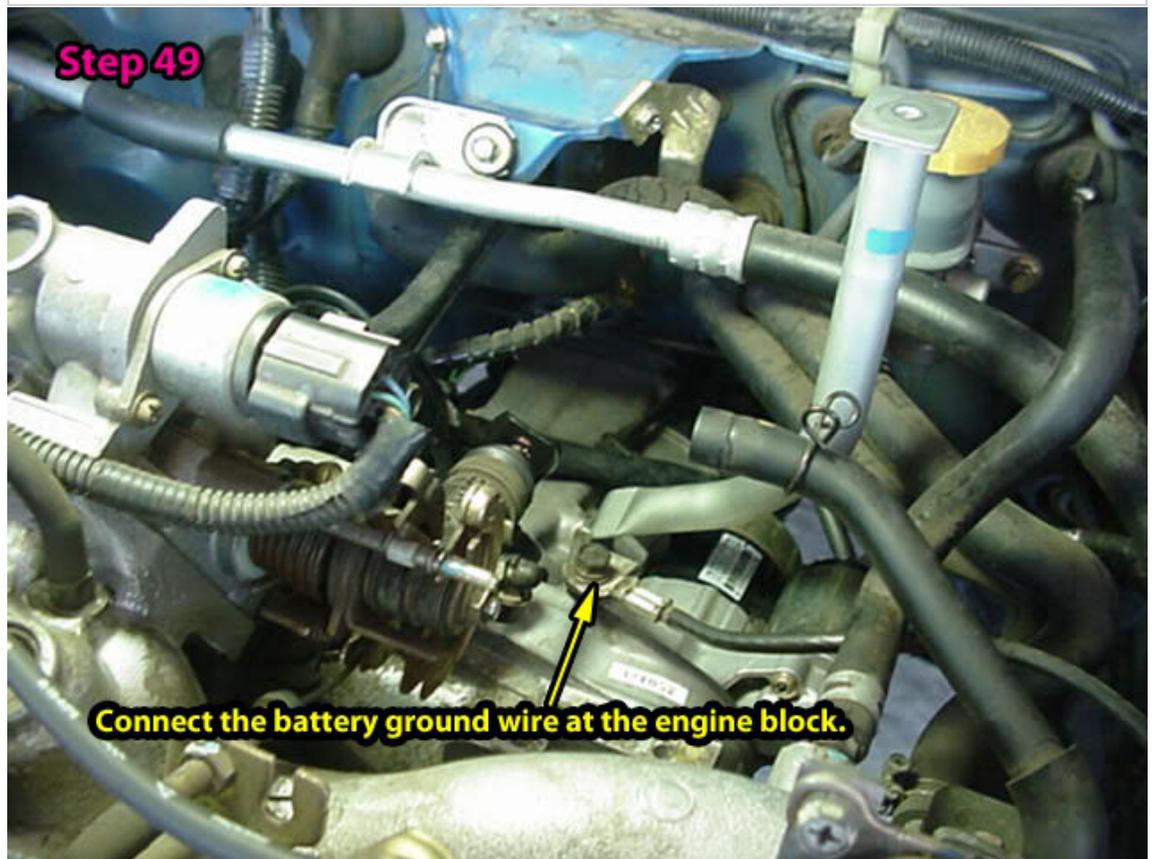
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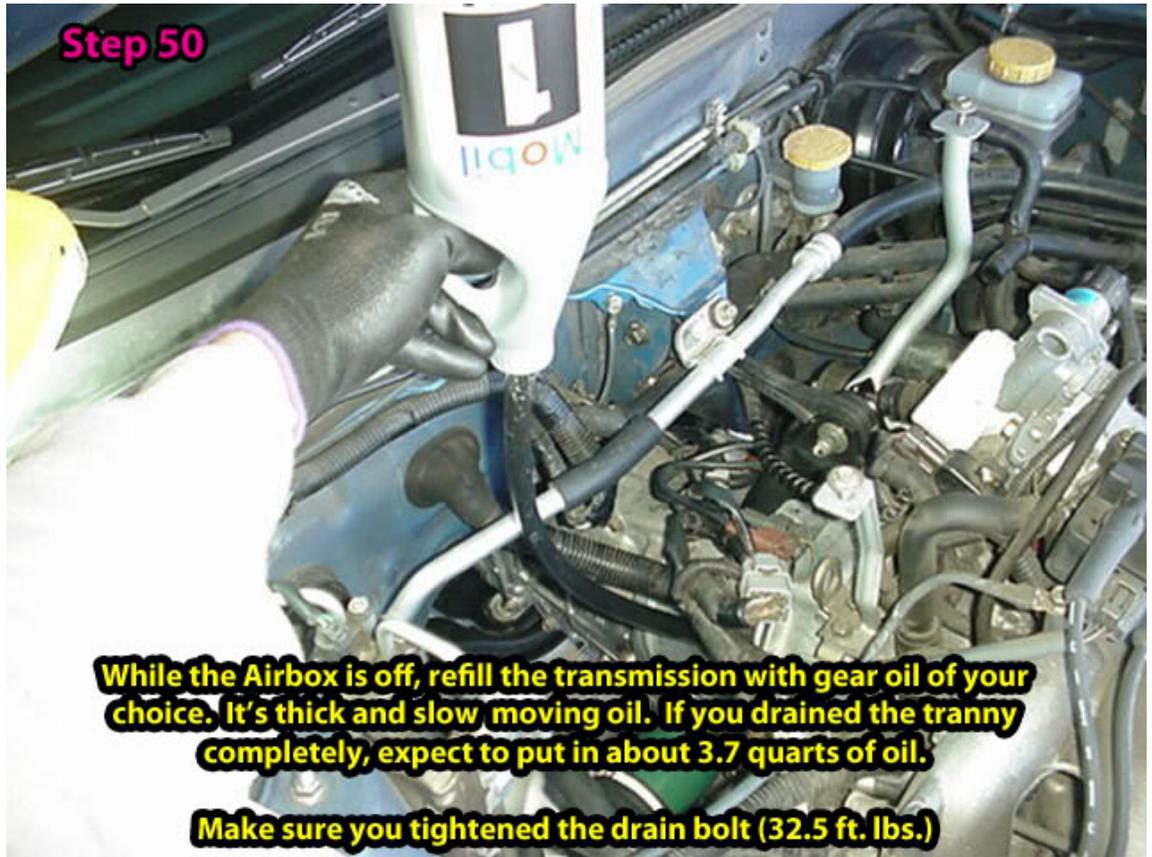
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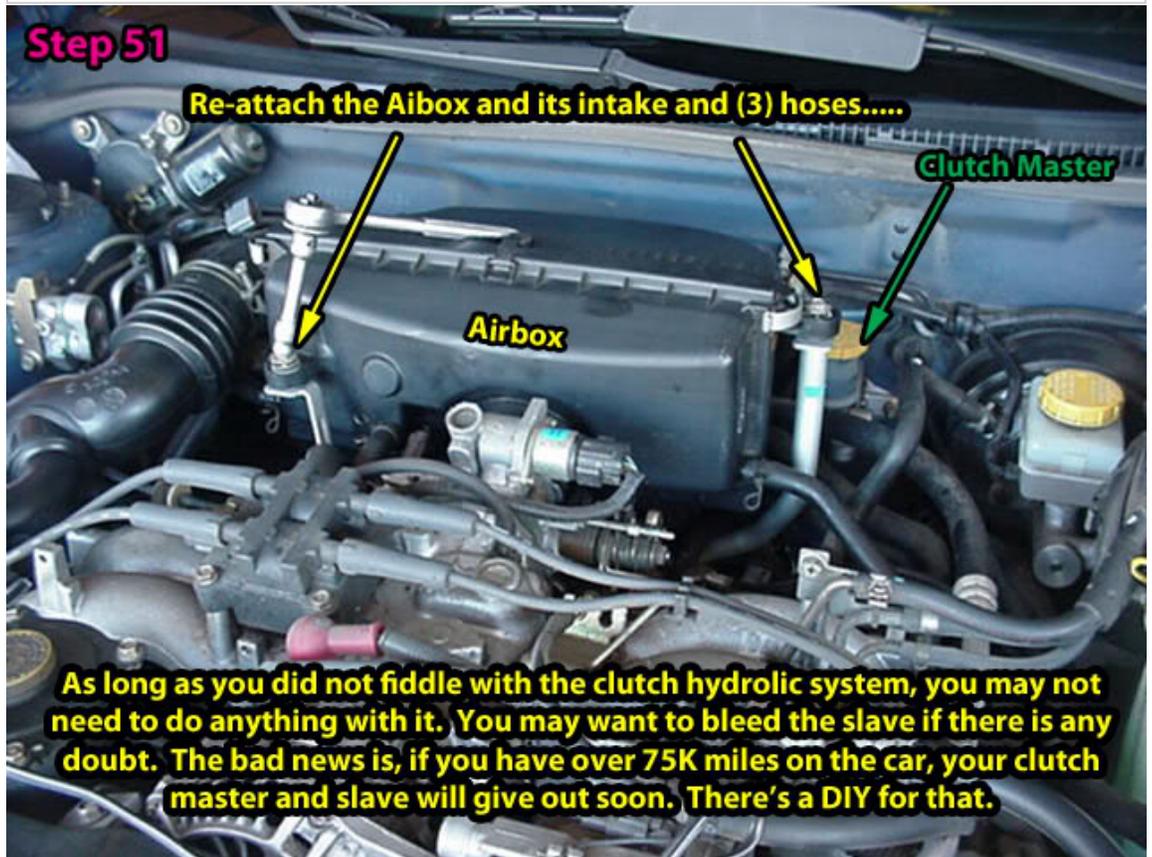
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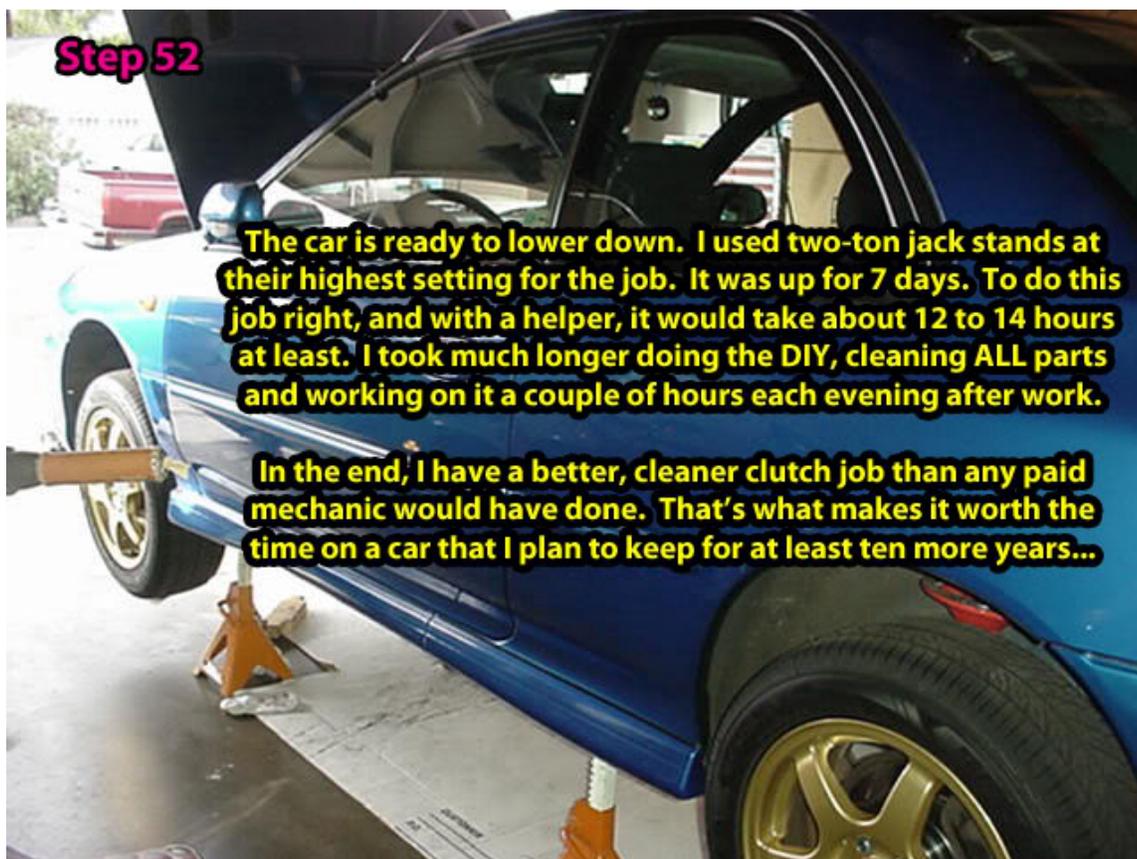
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Step 52

The car is ready to lower down. I used two-ton jack stands at their highest setting for the job. It was up for 7 days. To do this job right, and with a helper, it would take about 12 to 14 hours at least. I took much longer doing the DIY, cleaning ALL parts and working on it a couple of hours each evening after work.

In the end, I have a better, cleaner clutch job than any paid mechanic would have done. That's what makes it worth the time on a car that I plan to keep for at least ten more years...

END of DIY

1999 2.5RS. Original owner, WR Blue. 2013 BRZ Limited, WR Blue.

quote

02-13-2010, 07:27 PM

#2

danimprs

Premium Member

Car: '97 Impreza L
Fav Mod: Reliability
My: [Subaru Parts](#)
My: [Subaru Blog](#)
Join Date: Oct 2007
Location: PA
Trader Rating: **(12)**
Posts: 2,527



Wow. Excellent write up. Very well detailed and documented.

I was thinking about doing one of these that were more graphic than the written ones, but I'm glad you were able to do it. Too bad I have the bad habit of pulling the engine and doing this.

quote

02-13-2010, 07:34 PM

#3

Supers587

Wonderstud!

Car:
Fav Mod: Joshua
My: [Subaru Parts](#)
My: [Subaru Blog](#)
Join Date: Apr 2007
Location: In my house
Trader Rating: **(201)**
Posts: 12,195



Absolutely amazing! Very nice write-up.. one of the best I've seen. Thanks for taking the time out to put all this together. I'm sure a lot of people will put this to good use.

A big **+1** for you!

quote

02-13-2010, 07:51 PM

#4

George.of.the.Jungle

Baby♥Daddy



Car: 98L Wagon
Fav Mod: BOOOOOOST!!
 My: [Subaru Parts](#)
 My: [Subaru Blog](#)
 Join Date: Aug 2002
 Location: Charleston, SC
 Trader Rating: (**72**)
 Posts: 26,236

jeez! very good write up. very impressed. and very very thorough.

be careful who you open your house to.

quote

02-13-2010, 07:53 PM

#5

rallymedic

2.0L

Car: 1998 OBS White/Dirt
Fav Mod: Mudflaps / Rally Tires
 My: [Subaru Parts](#)
 My: [Subaru Blog](#)
 Join Date: Dec 2009
 Location: Central Valley California
 Trader Rating: (**0**)
 Posts: 94

sticky!!! thanks dude!

Ward i think you were a little hard on the beaver.

quote

02-13-2010, 07:54 PM

#6

George.of.the.Jungle

Baby♥Daddy



Car: 98L Wagon
Fav Mod: BOOOOOOST!!
 My: [Subaru Parts](#)
 My: [Subaru Blog](#)
 Join Date: Aug 2002
 Location: Charleston, SC
 Trader Rating: (**72**)
 Posts: 26,236

one thing that some of the older model L and brightons owners need to keep in mind, is that there are a few steps in there that are not the same. the main on i could see being the slave cylinder...as we don't have a wet clutch system. and there are only four bolts on the engine.

another thing to add, is that the support H brakcet doesn't need to come off unless you really really want to take it off. also helps to leave it on when sliding the trans out from under the car. also, if your exhaust system is all rusted and you don't want to risk breaking them, you can just undo the entire system and lay it on the ground, there's about 4 hangars, the one bolt on the trans and the header to engine bolts.

be careful who you open your house to.

Last edited by George.of.the.Jungle; 02-13-2010 at 07:57 PM..

quote

02-13-2010, 08:41 PM

#7

b1bflyer

Never-Ending Project



Car: Type R Project
My: [Subaru Parts](#)
My: [Subaru Blog](#)
Join Date: Jan 2006
Location: Georgia
Trader Rating: **(16)**
Posts: 504



quote



Very well done DIY, thanks!

Depending on what other maintenance/repairs I'm doing determines if I pull the engine or the tranny for a clutch change, but this will definitely get used next time I pull the trans.

Ryan

Oversteer scares passengers, understeer scares drivers.

02-13-2010, 08:41 PM

#8

voulo5

2.5L

Car: 1997 Legacy Outback
Fav Mod: Exhaust.
My: [Subaru Parts](#)
Join Date: Apr 2009
Location: Greene County NY
Trader Rating: **(0)**
Posts: 227



quote



AMAZING write up. wish this was up in september i wouldve did my own clutch job >.>

02-13-2010, 08:48 PM

#9

SR 25 RS

2.2L Turbo

Car: sold it to Susie the Subie
Fav Mod: AVO Turbo Kit
My: [Subaru Parts](#)
My: [Subaru Blog](#)
Join Date: May 2006
Location: Oakland
Trader Rating: **(8)**
Posts: 3,218



quote



where were you in june?

Love the RS jack trick

/\Delta Sigma Phi : Zeta Omicron Chapter/\

02-13-2010, 08:55 PM

#10

rsftw

2.7L

Car: 1995 Impreza L
Fav Mod: Tein Type RA
My: [Subaru Parts](#)
Join Date: Jan 2008
Location: King of Prussia, PA
Trader Rating: **(9)**
Posts: 321



quote



Pics with torque spec are awesome!!!! Thanks!

1995 Subaru Impreza L w/ JDM V2 WRX Swapped

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